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REPORT FOR BASELINE HUMAN HEALTH RISK ASSESSMENT

VOLUME I OF III

MISSOURI ELECTRIC WORKS (MEW) SITE CAPE GIRARDEAU, MISSOURI

Prepared For:

MEW Site Trust Fund Donors

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ENVIRONMENT AND WATER RESOURCES

REPORT FOR BASELINE HUMAN HEALTH RISK ASSESSMENT

RECEIVED

JUL 0 1 2005

SUPERFUND DIVISION

MISSOURI ELECTRIC WORKS SITE CAPE GIRARDEAU, MISSOURI

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July 5, 2005 H0931

EXECUTIVE SUMMARY

This report presents the results of a baseline human health risk assessment prepared for the Missouri Electric Works (MEW) Site Trust Fund Donors for the property formerly occupied by MEW, in Cape Gırardeau, Missourı. The Final Baseline Human Health Risk Assessment (BHHRA) Report was submitted to the United States Environmental Protection Agency (U.S. EPA) on July 28, 2004. The report was submitted following, or in conjunction with the Draft Groundwater Remediation Feasibility Study Report (Komex, 2004a), the Draft Groundwater Modeling Report (Komex, 2003f), the Groundwater Flow and Transport Supplemental Modeling Letter Report (Komex, 2004b), and the Draft Groundwater Remedial Investigation Report (Komex, 2004c). In response to U.S. EPA comments on the July 28, 2004 BHHRA Report received in November, 2004, the BHHRA report (Komex, 2005a) was jointly transmitted with the Groundwater Remedial Investigation Report (Komex, 2005b), the Groundwater Flow and Transport Supplemental Modeling Letter Report (Komex, 2005c), and the Fractured Bedrock Groundwater Remediation Feasibility Study (Komex, 2005d). Comments were provided for the above referenced documents by the U.S. EPA at meetings on April 8, April 27, and April 28, 2005 and each of the documents have been revised to incorporate the agency comments. These revised documents present the results, evaluation, discussion and conclusions of investigations at the Site and support a risk management decision for selection of an appropriate remedy for the Site.

This BHHRA document, in conjunction with the Groundwater Remedial Investigation (RI) Report (Komex, 2005e) Groundwater Flow and Transport Supplemental Modeling Letter Report (Komex, 2005f) and the Fractured Bedrock and Alluvium Groundwater Remediation Feasibility Study (Komex, 2005g), will complete the U.S. EPA directive to, "characterize the rate and extent of contamination from waste material in the groundwater at, or from the Site." as implemented in the Consent Decree Order on March 9, 1998.

For the purposes of this report, the physical extent of the property where MEW conducted operations will be referred to as "the Property". The Site is defined by the area of soils that were impacted by concentrations of polychlorinated biphenyls (PCBs) above the Site-specific clean-up levels. The Site therefore includes areas on and off the Property and has a total surface area of approximately 6.8 acres (2.8 hectares [ha]).

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MEW Site File 3DISC10000

Objectives

The objective of the risk assessment is to determine whether chemicals in groundwater at the Site pose a significant health risk to potential receptors in the area. The findings of the risk assessment will indicate potential concerns relative to the Site conditions.

Approach and Methodology

The risk assessment has been conducted in accordance with the Draft Work Plan (Komex, 2003a) and addendum (Komex, 2003b) The work follows the procedures and methodologies described in relevant guidance documents from the U.S. EPA and consists of the following steps:

- **Data review and evaluation**. Available data pertaining to the Site are used to develop a conceptual exposure model and to determine chemicals of potential concern (COPC).
- Chemical selection. COPC are selected to ensure that the most significant potential for human exposure and risk is evaluated. Subsequent steps of the risk assessment rely on the selected chemicals.
- Exposure assessment. Conceptual exposure scenarios are developed for the Site to describe the potential exposures and provide a basis for quantifying those exposures. In support of the exposure assessment, computer-aided fate and transport modeling has been performed to project exposure point concentrations.
- **Toxicity assessment**. Toxicity information is reviewed to determine acceptable reference doses and carcinogenic slope factors for the COPC.
- **Risk characterization**. Risk characterization is the estimate of the potential health risk based on the selected COPC, the exposure scenarios, exposure point concentrations established in the exposure assessment, and chemical-specific toxicity information.
- **Uncertainty analysis**. This is a qualitative evaluation of the inherent uncertainty associated with the risk results as a product of the information and assumptions used in their derivation.
- **Findings**. The final step in the process is the development and presentation of conclusions that can be drawn from the findings of the risk assessment.

Conceptual Exposure Model and Selection of COPC

A Conceptual Exposure Model (CEM) was developed for the Site based on the following future land uses:

- Commercial/industrial use at the Property. A deed restriction will be applied to the Property to ensure that groundwater beneath the Property cannot be used for water supply.
- Residential use on wetland area. City zoning for this area is light industrial/commercial. The assumption of residential land use is therefore considered conservative.

The CEM identified the following potentially complete exposure pathways that should be quantified:

- Exposure to an adult worker at the Site from the inhalation of COPC vapors that have migrated from the subsurface through the floor into the building;
- Exposure to an off-Site construction worker from direct contact with shallow groundwater in the wetland area; and
- Exposure to an off-Site resident from: (1) inhalation of COPC vapors that have migrated from the subsurface through the floor into the building; (2) ingestion/dermal contact of COPC in groundwater used for water supply; (3) inhalation of COPC arising from use of groundwater; and (4) ingestion and dermal contact with COPC in surface water during recreational use of the creek. Exposure to an off-Site resident not using groundwater at the Site for water supply was also considered.

Exposure to possible trespassers from recreational use of the creek (dermal contact and incidental ingestion) may also occur. Recreational use of the creek has been considered as part of the residential scenario. The relevant results of the assessment of risks to residential receptors can therefore be used for assessing the risk to trespassers.

COPC were identified by comparison of maximum concentrations detected in groundwater with risk screening values. The U.S. EPA Region 9 Preliminary Remediation Goals (PRGs) for the tap water pathway have been used to derive these screening values. There were 52 compounds selected as COPC, of which 48 have been quantitatively evaluated in this BHHRA. Thirty one of the organic COPC have never been detected in groundwater at the Site but have been selected as COPC because the maximum method detection limit (MDL) for these analytes exceeds the applied screening toxicity values. Four additional non-detected chemicals were retained as COPC but were not evaluated quantitatively in this risk assessment due to the absence of available toxicity data.

Inorganic compounds were investigated during the initial RI work in the late 1980 and early 1990s and it was determined that the inorganic concentrations at the Site did not indicate the presence of contamination associated with the operations of MEW. (EarthTech 1990, U.S. EPA

1990 Record of Decision [ROD]). Based on this evaluation and at the direction of the agency, inorganic compounds are not listed as COPC.

Quantification of Exposure

Fate and transport modeling was used to predict point of exposure (POE) concentrations for the identified receptors. Two types of modeling have been conducted: (1) groundwater modeling to predict reasonable maximum exposure (RME) concentrations of organic COPC that could occur in groundwater off Site; and (2) vapor modeling to predict RME concentrations of organic COPC that could occur in indoor air as a result of impacted groundwater beneath a building.

The groundwater modeling was conducted in two steps as documented in the Groundwater Modeling Letter (Komex, 2005f): (1) fracture network modeling was conducted using Fracman to improve the understanding of COPC migration within the fractured limestone and to validate the use of an equivalent porous medium (EPM) model approach; and (2) the EPM was used to predict POE concentrations for use in the exposure assessment.

This included the use of maximum observed groundwater concentrations for the source concentrations of detected organic COPC at the Site and one-half the MDL for non-detected COPC. The model was used to predict POE concentrations of organic COPC in groundwater at three hypothetical drinking water well locations (Well A, Well B and Well C), shallow groundwater within the wetland area and surface water within the creek. Although the EPM model can reasonably predict COPC concentrations in a simulated fracture and model results are valid for scales of evaluation that are likely to include one or more fractures, the exact occurrence, location and geometry of fractures in the field are not known. Therefore, model results can be used to assess worst-case risk to hypothetical receptors (by wells modeled as being installed in simulated fractures); however, the results can not be used at the scale necessary to precisely locate wells for either remediation or water supply purposes.

As outlined in U.S. EPA Guidance, the Johnson-Ettinger model was used to predict the concentrations of COPC in indoor air arising from the intrusion of soil vapor into a building. The 95th percentile upper confidence limit (UCL) mean groundwater concentrations derived from wells located in the source zone were used for calculating indoor air concentrations for a worker at the Property. The RME concentrations in shallow groundwater off Site predicted by the EPM were used for calculating indoor air concentrations for a resident living on the wetland area.

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Exposure equations and factors were obtained from the U.S. EPA Risk Assessment Guidance for Superfund (RAGS) for quantifying exposure for each of the pathways identified in the CEM. Parameter values were selected to ensure that the RME was quantified. Parameter values were also collated for central tendency exposure (CTE).

Toxicological Assessment

Toxicological data were obtained from the appropriate sources following U.S. EPA's hierarchy. For the purposes of this risk assessment, 37 compounds were considered carcinogenic. Reference doses and cancer slope factors were obtained for these compounds, where available. Fifteen compounds were treated as non-carcinogens. Reference doses were obtained for these compounds, where available. A range of cancer slope factors was identified for trichloroethene (TCE). Three slope factors representing this range have been used for characterizing risks from TCE.

Risk Characterization

The results of the exposure assessment have been combined with the toxicological data to allow the risks associated with impacted groundwater below and extending from the Property to be evaluated. A conservative approach has been adopted for both the exposure assessment and selection of toxicological parameters. The calculated RME risk factors for organic COPC using these conservative assumptions are presented below:

Receptor	Total Hazard Index (HI) For Organic COPC	Incremental Lifetime Cancer Risk (ILCR) For Organic COPC
Adult worker on MEW Property	01	1 x 10 ⁻⁵ to 6 x 10 ⁻⁶
Adult off-Site construction worker in wetland area	2	5 x 10 ⁻⁷ to 4 x 10 ⁻⁷
Resident (child and/or adult) on wetland area using impacted groundwater for water supply (Hypothetical Well D)	124	, 1 x 10 ⁻²
Resident (child and/or adult) on wetland area with municipal water supply (Hypothetical Well C)	0.06	2 x 10 ⁻⁶ to 3 x 10 ⁻⁷
Trespasser	0.003	3 x 10 ⁻⁸

The calculated RME HI for organic COPC for the adult on-Site worker is 0.1. The RME ILCR for organic COPC for an adult worker ranges from 1×10^{-5} to 6×10^{-6} , depending on the TCE slope factor used. This ILCR is based on a 25-year exposure duration averaged over a 70-year life span.

The calculated RME HI for organic COPC for the adult off-Site construction worker in the 'wetland area is 2. The RME ILCR for organic COPC for an adult off-Site construction worker ranges from 5×10^{-7} to 4×10^{-7} , depending on the TCE slope factor used. This ILCR is based on a 1-year exposure duration averaged over a 70-year life span.

The EPM has shown that elevated concentrations of organic COPC could exist within the limestone and alluvial deposits beneath the wetland area. A range of risks has been calculated for a future resident using three hypothetical water supply wells located in the wetland area. The highest risk has been predicted for the residential receptor when the drinking water supply well is located within the plume of impacted groundwater. A maximum RME HI of 124 and an ILCR of 1×10^{-2} have been predicted for organic COPC for this scenario using the worst case concentrations predicted by the groundwater model. The ILCR values for the residential receptor are based on a 30-year exposure duration, including 6 years as a child and 24 years as an adult, averaged over a 70-year life span.

The maximum calculated RME HI for organic COPC for a resident that does not use groundwater for water supply or uses groundwater not impacted by organic COPC is 0.06. The

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calculated ILCR for organic COPC for this scenario is 2×10^{-6} and 3×10^{-7} , depending on the slope factor used.

The calculated RME HI for organic COPC for a trespasser from recreational use of the creek (dermal contact and incidental ingestion) is 0.003. The calculated maximum ILCR for this scenario is 3×10^{-8} . The ILCR values for the trespasser are based on an exposure duration as defined for the off-Site resident.

The calculated CTE risk factors for organic COPC are presented below:

Receptor	Total Hazard Index (HI) For Organic COPC	Incremental Lifetime Cancer Risk (ILCR) For Organic COPC
Adult worker on MEW Property	0.09	2 x 10-6 to 1 x 10-6
Adult off-Site construction worker in wetland area	0.5	2 x 10 ⁻⁷ to 1 x 10 ⁻⁷
Resident (child and/or adult) on wetland area using impacted groundwater for water supply (Hypothetical Well D)	75	3 x 10 ⁻³ to 2 x 10 ⁻³
Resident (child and/or adult) on wetland area with municipal water supply (Hypothetical Well C)	0.04	4 x 10 ⁻⁷ to 7 x 10 ⁻⁸
Trespasser	0.001	- 5 x 10 ⁻⁹ to 4 x 10 ⁻⁹

Conclusions

Based on the U.S. EPA's acceptable risk range of 1.0×10^{-4} to 1.0×10^{-6} , and an acceptable HI of 1, the following conclusions are drawn from the risk assessment:

- Indoor vapor intrusion from impacted groundwater beneath the Property was assessed as the only potentially complete pathway for future on-Site workers. Risk quantification for organic COPC has shown no significant risk to future on-Site workers from this pathway.
- Dermal contact with and incidental ingestion of impacted shallow groundwater were assessed as the only potentially complete pathways for future off-Site construction workers. Risk quantification for organic COPC showed no significant cancer risk to future off-Site workers from this pathway. However, the assessment showed that there could be a significant non-cancer risk from organic COPC to future off-Site workers from this pathway

- The use of impacted groundwater for water supply, indoor vapor intrusion from impacted groundwater and recreational use of the creek (dermal contact and incidental ingestion) were assessed as the only potentially complete pathways for future off-Site residents. Risk quantification for organic COPC showed no significant risk to future off-Site residents from indoor vapor intrusion and recreational use of the creek. The assessment showed that there could be a significant risk from organic COPC to future residents living in the wetland area if they were to use impacted groundwater as their water supply.
- Risk quantification for organic COPC showed no significant risk to future residents living in the wetland area if they use an alternative water supply (*i.e.*, municipal water supply).
- Recreational use of the creek (dermal contact and incidental ingestion) was assessed as the
 only complete pathway for trespassers on the wetland area. This pathway was quantified as
 part of the residential scenario and showed no significant risk from organic COPC. It has
 therefore been concluded that there is no significant risk from organic COPC to trespassers
 from recreational use of the creek.

In summary, the results of the risk assessment have demonstrated that the risk to adult workers at the MEW Property is unlikely to be significant. This is based on the assumption that a restriction is applied to the Property to prevent the usage of groundwater beneath it. Groundwater fate and transport modeling has indicated that the groundwater plume containing COPC could extend off Site to the southeast of the MEW Property beneath the wetland area. Exact prediction of the plume extent is not possible due to the uncertainties inherent in modeling COPC migration in fractured media. The risk assessment has shown that use of the potentially impacted groundwater beneath the wetland area could present a significant risk to receptors. It has also been demonstrated that there could be a significant risk from organic COPC to future off-Site construction workers in the wetland area.

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LIST OF ACRONYMS AND ABBREVIATIONS

ASL above sea level

atm.m³/mol partial pressure molar concentration

ATSDR Agency for Toxic Substances and Disease Registry

bgs below ground surface

Cal-EPA California Environmental Protection Agency

CDI chronic daily intake

CEM conceptual exposure model

cm centimeters

COPC chemicals of potential concern

CSF cancer slope factor

CTE central tendency exposure EPM equivalent porous medium f_{∞} fraction of organic carbon

FS feasibility study

gm gram ha hectare

HEAST Health Effects Assessment Summary Tables

HI hazard index HQ hazard quotient

ILCR incremental lifetime cancer risk
IRIS Integrated Risk Information System

kg kilograms km kilometers

Komex H20 Science, Inc.

K_{oc} organic carbon partition coefficient

L Liters

LOAEL lowest-observable-adverse-effect level

LOD limit of detection

LOQ limit of quantification

LQMP Laboratory Quality Management Plan

m meters

MDL method detection limit
MEW Missouri Electric Works

μg micrograms

KOMEX

μg/kg micrograms per kilogram

 μ g/L micrograms per Liter

mg mıllıgrams

mg.kg-1.d-1 milligrams per kilogram body weight-day

mg/m³ milligrams per cubic meter

NOAEL no-observable-adverse-effect level

PCBs polychlorinated biphenyls

PCE tetrachloroethene ppm parts per million

PRG preliminary remediation goal
PRTV Peer Reviewed Toxicity Value

RAGS Risk Assessment Guidance for Superfund

RAIS Risk Assessment Information System

RCRA Resource Conservation and Recovery Act

RfC reference concentration

RfD reference dose

RI Remedial Investigation

RME reasonable maximum exposure

STD Site Trust Fund Donors STV screening toxicity value

SVOC semi-volatile organic compounds

TCE trichloroethene

UCL upper confidence limit

U.S. EPA United States Environmental Protection Agency

USGS United States Geological Survey

VOCs volatile organic compounds

1 INTRODUCTION

Komex H₂O Science Inc. (Komex) was commissioned by the Missouri Electric Works (MEW) Site Trust Fund Donors (STD) to conduct a baseline human health risk assessment of the MEW Site. This document presents the risk assessment, which has been conducted in accordance with the Risk Assessment Draft Work Plan (Komex, 2003a) and addendum (Komex, 2003b).

The Final Baseline Human Health Risk Assessment (BHHRA) Report was submitted to the United States Environmental Protection Agency (U.S. EPA) on July 28, 2004. The report was submitted following, or in conjunction with the Draft Groundwater Remediation Feasibility Study Report (Komex, 2004a), the Draft Groundwater Modeling Report (Komex, 2003f), the Groundwater Flow and Transport Supplemental Modeling Letter Report (Komex, 2004b), and the Draft Groundwater Remedial Investigation Report (Komex, 2004c). In response to U.S. EPA comments on the July 28, 2004 BHHRA Report received in November, 2004, the BHHRA report (Komex, 2005a) was jointly transmitted with the Groundwater Remedial Investigation Report (Komex, 2005b), the Groundwater Flow and Transport Supplemental Modeling Letter Report (Komex, 2005c), and the Fractured Bedrock Groundwater Remediation Feasibility Study (Komex, 2005d). Comments were provided for the above referenced documents by the U.S. EPA at meetings on April 8, April 27 and April 28, 2005 and each of the documents have been revised to incorporate the agency comments. These revised documents present the results, evaluation, discussion and conclusions of investigations at the Site and support a risk management decision for selection of an appropriate remedy for the Site.

This BHHRA document, in conjunction with the Groundwater Remedial Investigation (RI) Report (Komex, 2005e) Groundwater Flow and Transport Supplemental Modeling Letter Report (Komex, 2005f) and the Fractured Bedrock and Alluvium Groundwater Remediation Feasibility Study (FS) (Komex, 2005g), will complete the U.S. EPA directive to, "characterize the rate and extent of contamination from waste material in the groundwater at, or from the Site." as implemented in the Consent Decree Order on March 9, 1998.

1.1 OBJECTIVES

The objective of the risk assessment is to determine whether chemicals in groundwater at the Site pose a significant health risk to potential receptors in the area. The findings of the risk assessment will indicate potential concerns relative to Site conditions.

1.2 METHODOLOGY

The risk assessment has been conducted in accordance with the Draft Work Plan (Komex, 2003a) and addendum (Komex, 2003b). The work follows the procedures and methodologies described in relevant guidance documents from the U.S. EPA. These include the following:

- Risk Assessment Guidance for Superfund (RAGS) Volume I: Human Health Evaluation Manual, Part A (U.S. EPA, 1989a);
- RAGS Volume I: Human Health Evaluation Manual, Part B, Development of Risk-Based Preliminary Remediation Goals (U.S. EPA, 1991a);
- RAGS Volume I: Human Health Evaluation Manual, Part C, Risk Evaluation of Remedial Alternatives (U.S. EPA, 1991b);
- RAGS Volume I: Human Health Evaluation Manual, Part D, Standardized Planning, Reporting and Review of Superfund Risk Assessments (U.S. EPA, 2001a);
- RAGS Volume I: Human Health Evaluation Manual Part E, Supplemental Guidance for Dermal Risk Assessment (U.S. EPA, 2004b);
- Guidance for Data Useability in Risk Assessment (U.S. EPA, 1992c);
- National Oil and Hazardous Substances Pollution Contingency Plan (U.S. EPA, 1990b);
- Exposure Factors Handbook (U.S. EPA, 1990a, 1997a);
- Child-Specific Exposure Factors Handbook (Interim Report) (U.S. EPA, 2002a);
- Dermal Exposure Assessment, Principles and Applications (U.S. EPA, 1992a);
- Integrated Risk Information System (IRIS) database (U.S. EPA, 2003a);
- Soil Screening Guidance (U.S. EPA, 1996b, c);
- Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (U.S.EPA, 2002b);
- Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites (U.S.EPA, 2002c);
- Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance) (U.S. EPA, 2002d); and
- Superfund Exposure Assessment Manual (U.S. EPA, 1988c).

The methodology used to conduct the baseline risk assessment consists of seven steps. These are illustrated on **Figure 1-1** and are summarized below.

3DISC10002

Step 1: Data Review and Evaluation

Readily available information related to operational history, hydrology, geology, waste characteristics, chemical concentrations, surrounding land uses, topography, climate, and local meteorology are collected and reviewed. The data are screened according to the data usability criteria established for risk assessment. This information forms the basis of the risk assessment.

Step 2: Chemical Selection

Chemicals of potential concern (COPC) are selected to ensure that the most significant potential for human exposure and risk is evaluated, as required by the agencies. Subsequent steps of the risk assessment rely on the selected chemicals.

Step 3: Exposure Assessment

Conceptual exposure scenarios are developed for the Site to describe the potential exposures and provide a basis for quantifying those exposures. Each exposure scenario addresses the source of the COPC, route or mechanism of exposure, and potentially exposed populations (known as "receptors"). The need to quantify potential exposures to each receptor is determined after a review of project files.

In support of the exposure assessment, computer-aided fate and transport modeling has been performed to project exposure point concentrations. Two types of modeling have been conducted: (1) groundwater modeling to predict reasonable maximum concentrations of COPC that could occur in groundwater off Site; and (2) vapor modeling to predict reasonable maximum concentrations of COPC that could occur in indoor air as a result of impacted groundwater beneath the building.

Step 4: Toxicity Assessment

For each identified COPC, an understanding of its toxicity to humans as well as potential environmental effects is essential. Toxicity information, which includes carcinogenic and non-carcinogenic effects, is available for many compounds through regulatory agencies and scientific literature. This information is reviewed to determine acceptable reference doses and carcinogenic slope factors for the COPC.

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Step 5: Risk Characterization

Risk characterization is the estimate of the potential health risk based on the selected COPC (Step 2), the exposure scenarios, exposure point concentrations established in the exposure assessment (Step 3), and chemical-specific toxicity information (Step 4). Included are the cancer risk estimates, non-cancer hazard indices, and a summary of assumptions used in the calculations.

Step 6: Uncertainty Analysis

Step 6 involves the evaluation of the inherent uncertainty associated with the risk results as a product of the information and assumptions used in their derivation. A qualitative discussion is provided assessing the level of conservatism inherent in the risk values.

Step 7: Findings

The final step in the process is the development and presentation of conclusions that can be drawn from the findings of the risk assessment. This information is useful in providing risk managers insight into the interpretation of the risk assessment results.

1.3 REPORT ORGANIZATION

Section 2 provides background information regarding the Site and its environment for use in the risk assessment. It describes the Site and surrounding area, its history, geology, and hydrogeology. The distribution of chemical concentrations within groundwater on and off the Site is also presented.

The COPC selection process is presented in **Section 3**. This includes a description of the data validation process and the procedure used for selecting COPC.

Section 4 summarizes the toxicity information (both carcinogenic and non-carcinogenic effects) for COPC and identifies the toxicity criteria used to characterize potential health risks.

The conceptual exposure model for the Site is described in **Section 5**. This addresses future land use, COPC sources, potential exposure pathways, and potentially exposed populations. Through the Site conceptual exposure model, possible exposure pathways are identified, and those pathways deemed significant to the identified receptors are selected for quantitative evaluation.

The methods for exposure point concentration calculation are presented in **Section 6**. The statistical methods for the evaluation of chemical data and fate and transport analysis to predict point of exposure concentrations are presented.

The quantification techniques for potential health risks to the exposed receptors are discussed in **Section 7**. This section presents the risk characterization methodology for the Site land use and associated exposure scenarios developed in **Section 5**.

A qualitative analysis of uncertainty within the calculation of risk is presented in **Section 8**, and a summary of the risk assessment findings are presented in **Section 9**.

The sources of information used in the development of this report are presented in **Section 10**.

A list of laboratory non-conformances is provided in **Appendix A**. The toxicological profiles for COPC are presented in **Appendix B**. The groundwater fate and transport modeling is presented in **Appendix C**. Statistical analysis of groundwater concentrations is provided in **Appendix D**, and the model output from the Johnson-Ettinger vapor modeling is presented in **Appendix E**.

2 BACKGROUND INFORMATION

The physical characteristics of the Site are described in detail in several Site investigation reports prepared by Komex (2001a, 2002a, 2003c). The following paragraphs summarize the published information as it relates to this risk assessment.

2.1 SITE DESCRIPTION

The MEW Property is located on a 6.4-acre (2.6-hectare [ha]) tract of land adjacent to Missouri State Highway 61 in a commercial area of Cape Girardeau, Missouri. The Property is bounded to the north and east by retail and office properties, to the south by retail properties, and to the west by Highway 61 (South Kings Highway) (**Figure 2-1**). Currently, the Property consists of a grass field with a single concrete building (used by the owner to store equipment) within the northwest corner.

The Site is defined by the area of soils that were impacted by concentrations of polychlorinated biphenyls (PCBs) above the Site-specific cleanup levels. The cleanup levels, as documented in the Site's Record of Decision (U.S. EPA, 1990c), were 10 parts per million (ppm) PCBs for soils to a depth of 4 feet (1.2 meters [m]) below ground surface (bgs), and 100 ppm at depths greater than 4 feet (1.2 m) bgs. The Site includes areas on and off the MEW property and has a total surface area of approximately 6.8 acres (2.8 hectares [ha]).

The MEW Property is situated on top of a flattened ridge that runs approximately southwest to northeast. This ridge separates the valley of the Cape LaCroix Creek to the north and a low-lying wetland area to the south (**Figure 2-1**). A small creek flows eastwards across the wetland area and joins the Cape LaCroix Creek approximately 0.7 miles (1.1 kilometers [km]) east of the Site. The Cape LaCroix Creek joins the Mississippi River 1.5 miles (2.4 km) to the southeast of the Property.

Ground surface elevation at the Property is approximately 405 feet (123.4 m) above sea level (ASL). To the south of the Site, the ground slopes downward to Wilson Road, which forms the northwestern boundary of the wetland area (**Figure 2-1**). The elevation of the wetland area varies from 360 feet (109.7 m) ASL at Wilson Road to 351 feet (107 m) ASL at the small creek in the wetland area. To the north of the Site, the ground slopes downward to the relatively flat valley bottom of the Cape LaCroix Creek. A runoff channel is located near the eastern boundary of the Property. This drains toward the wetland area to the southeast of the Site.

KOMEX

2.2 SITE HISTORY

MEW has been at the present location since 1953. Until 1992, MEW sold, serviced, and rebuilt transformers, electrical motors, and electrical equipment controls. During past operations, MEW recycled materials from old equipment and recovered copper wire and dielectric fluid from transformers. The salvaged transformer oil was filtered through Fuller's Earth for reuse. Approximately 90 percent of the oil was recycled, and approximately 16,000 transformers were repaired or scrapped at the Property until it closed. The total volume of transformer oil that was not accounted for during this period has been estimated at 28,000 gallons (105,992 Liters [L]).

Soils impacted with PCBs were remediated during the period July 1999 through July 2000. This involved the excavation, treatment (by thermal desorption), and replacement of soils that had concentrations of PCBs above the Site-specific cleanup criteria.

2.3 CLIMATE AND METEOROLOGY

Cape Girardeau's climate is continental, due to the region's central location within the United States of America. Temperature in this region is subject to frequent fluctuation, varying between 24°F and 90°F seasonally between 1971 and 2000, and averages 57.2°F daily. For the same period, annual precipitation has averaged 46.5 inches and monthly between 3.2 inches and 5.1 inches. The wettest months are typically March through May, November, and December. Snowfall occurs between October and April, averaging 12.8 inches annually.

A tipping bucket rain gauge with a built-in data logger was installed on the Site in April 2001 to obtain Site precipitation data. In addition, daily precipitation data was obtained from the Cape Girardeau Municipal Airport, which is located approximately one mile (1.6 km) from the Site, for the period 1 March 2001 to 28 February 2002. The two sets of groundwater data show a good correlation with precipitation data ($R^2 = 0.88$).

Rainfall has been recorded in each month since installation of the rain gauge at the Site. The total rainfall from 27 July 2001 until 15 October 2003 is approximately 150 inches, an average of 64 inches annually (adjusted for months not recorded), or approximately 5 inches per month. Typically, the highest rainfall has occurred in the months of April, May, September, and October. Exceptional months have been September and October 2003, when rainfall exceeded 17.5 inches and 20 inches, respectively. The largest event recorded in one day at the Site was 4.1 inches on September 23, 2003. The largest rainfall event recorded in one day at the Cape Girardeau Municipal Airport was 5.81 inches on 19 July 2001.

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2.4 GEOLOGY

2.4.1 REGIONAL GEOLOGY

The MEW Site is situated within the southeastern part of the state of Missouri, which contains exposures of geologic formations ranging in age from Late Paleozoic to present time. In the Cape Girardeau area, the uppermost formation is commonly a surficial, undifferentiated Pleistocene age loess deposit that consists predominantly of loosely consolidated silts and silty clays. Where the loess is encountered, it may vary in thickness up to 30 feet (9 m). The loess was deposited during an eolian erosional and depositional period during the Pleistocene age and lies on top of the Ordovician age limestone bedrock units of Cape Girardeau.

In the vicinity of the Site, the Pleistocene age loess of Cape Girardeau is underlain by the Plattin Formation. This is a 400-foot (122-m) thick limestone, which is slightly dolomitic and fossiliferous. This dips toward the northeast at a maximum of 2 degrees. The underlying Joachim Dolomite outcrops approximately 1.2 miles (1.9 km) to the southwest of the Site. The United States Geological Survey (USGS) solid geology map shows two faults running northwest to southeast passing close to the western boundary of the Site.

2.4.2 SITE GEOLOGY

The USGS surficial geology map shows that in the vicinity of the Site the Pleistocene loess is typically present on higher ground. Valley areas are shown to contain "terrace" and "alluvial" deposits. Boreholes drilled at the Site and in the wetland area confirm this change in surficial lithology.

The native, surficial soil at the Site consists of 15 feet (4.6 m) to 25 feet (7.6 m) thick loss classified as the Menfro Silt, underlain by a brownish-red gravelly clay. The Menfro silt consists of firm brown silty clay that is easily eroded and characteristically develops on losss-covered ridge tops and hillsides of 5 to 9 percent slope. The gravelly clay is derived from the weathering degradation of the Plattin Formation Limestone (limestone residuum soil).

The thickness of surficial deposits beneath the wetland area is known to vary from 20 feet (6.1 m) at monitoring well MW-15A by Wilson Road to 146 feet (44.5 m) at MW-20C. The greater alluvium thickness noted within the Wetland area is caused by a depression feature, which possibly might be a localized low, within a buried former river channel, in the surface of the underlying Plattin Formation Limestone. Evidence for this depression is apparent from the

2003 geophysical survey. Boreholes drilled in this depression have shown that the surficial deposits in this area consist of silty sands.

- **Upper weathered zone** typically 50 feet thick. This zone is characterized by vertical fractures with large apertures, approximately 23 feet apart. These fractures have been enlarged by dissolution, especially at fracture intersections. Fractures with apertures in excess of 3 feet have been observed. The major fracture solution features in this zone are infilled with silty loess deposits. Horizontal bedding plane fracturing is common, especially in the uppermost 10 feet of the bedrock.
- Intermediate zone approximately 115 feet thick. This zone is characterized by persistent vertical fractures spaced 100 to 150 feet apart, with some degree of dissolution-related opening. Fracture apertures are significantly narrower than those in the upper weathered zone and are characterized by varying degrees of calcite and other mineral deposition. Very few horizontal bedding fractures were observed, however this may represent a transport pathway of some significance..
- **Deeper zone** greater than 260 feet thick. This zone is characterized by occasional discrete vertical fractures more than 150 feet apart. Fractures are narrow and frequently infilled with mineral deposits. Horizontal bedding fractures are rare in this zone, however this may represent a transport pathway of some significance.

2.5 HYDROGEOLOGY

The hydrogeology of the Site and surrounding area has been inferred from data collected from wells on or near the Site (Komex, 2005e). The locations of these wells are shown on **Figure 2-2**.

The majority of wells at the Site are completed within the weathered zone of the bedrock with screened depths of less than 60 feet (18.3 m) bgs. Monitoring wells MW-5 and MW-6 are completed in the loess and monitoring wells MW-11 and MW-11A are completed within the intermediate and deep zones of the bedrock. Off-Site monitoring wells MW-16A, MW-16B, MW-20A, MW-20B and MW-21A were installed in alluvium (above the soil/rock interface), and wells MW-16C, MW-17A, MW-18, MW-20C and MW-21B were installed just above the soil/rock interface. The remaining wells (MW-12, MW-13, MW-14, MW-15A, MW-15B, and MW-17B) were installed in the Plattin Formation Limestone.

Analysis of groundwater level hydrographs from monitoring wells MW-3 (completed in the weathered zone of the limestone) and MW-11 (completed in the intermediate zone) show that groundwater within the upper 165 feet (50.3 m) of limestone has hydraulic continuity. Monitoring well MW-11A, completed in the deep limestone, has a different hydrograph

response than MW-3 and MW-11. This suggests that there is limited hydraulic continuity between the intermediate and deep limestone.

The groundwater table at the MEW Property is approximately 40 feet (12.2 m) bgs and is generally within the limestone. Seasonal fluctuations of up to 5 feet (1.5 m) have been observed in wells on the MEW Property. The loess is generally unsaturated, with the exception of some perched water (observed in MW-6A) and where the loess deposits occur within fractures of the bedrock below 40 feet bgs.

Monitoring at the Site has shown that groundwater flows southeast towards the creek (Figure 2-2). An upward hydraulic gradient has been observed at well cluster MW-16A, B, and C and MW-20A, and B, which suggests that groundwater, within the limestone, is discharging to the creek via the surficial deposits. Groundwater piezometry within the limestone is relatively complex due to the presence of fractures.

The majority of flow within the limestone is interpreted to occur within the fractures of the weathered and intermediate zones of limestone. The limestone within the deep zone is described as competent with few fractures. Any fractures that are present within this zone are mostly infilled and, consequently, there is unlikely to be significant groundwater flow within this zone.

3 SCREENING OF CHEMICALS

Throughout the course of a site investigation, numerous soil, surface water and groundwater samples are collected. These samples are typically designed to address specific site characterization issues, and may not be suitable for use in a health risk assessment. A detailed data evaluation process was completed to determine the validity and usefulness of the sample results in a quantitative risk assessment (U.S. EPA, 1992b).

Once the data are determined to be valid and of sufficient quality to be used in a quantitative risk assessment, further data analysis was employed to identify the COPC. The resulting COPC were used throughout the remainder of the risk assessment process. The following presents the site-specific approach to data validation and screening which was taken for the MEW Site risk assessment.

3.1 DETERMINATION OF DATA USEABILITY

The data validation process for risk assessment has been conducted in three stages:

- **Data review**. This involves the compilation and review of Site-related documentation and analytical data;
- **Data screening**. The identification of data that reflect current site conditions and are relevant to the risk assessment; and
- **Data validation**. This includes a review of sampling protocols and documentation, the determination of data sources, and an examination of data qualifiers and flags to identify the data that are suitable for use in the risk assessment.

3.1.1 DATA REVIEW

Numerous phases of site investigation have occurred at the Site and, as a result, a large amount of data is available for review. Data evaluated for use in the risk assessment include:

- Hydrogeological Investigation Report (EarthTech, 1990);
- Supplemental Hydrogeological Investigation Report (EarthTech, 1991);
- Quarterly Groundwater Monitoring Reports (Komex 2001d, 2001e, 2002d, 2002e, 2003b, 2003c, 2003d, 2004d, 2004e, 2004f, 2004g, 2004h, and 2005h);
- Re-Evaluation of Groundwater Conditions and Conceptual Model Report (Komex, 2001a);
 and

Draft Groundwater Design Investigation Work Plan (Komex, 2002a).

3.1.2 DATA SCREENING

The scope of the human health risk assessment is to address the risks related to impacted groundwater at the Site. The concentrations of chemicals in groundwater have therefore been used as the primary source of data for assessing risk. Numerous soil samples have been collected at the Site prior to the soil remediation work to define the extent of soil impact. With soil remediation completed, these data are not relevant to the current Site conditions and consequently have not been used in the groundwater risk assessment. Limited surface water sampling has been conducted from the creek flowing to the southeast of the site. Groundwater from the site is interpreted to discharge to this creek (Section 2.5) and therefore these surface water data are considered relevant to the risk assessment, for comparison purposes only.

Remediation was conducted in 1999 and 2000 to remove impacted soils from the Site. This remediation work likely produced an improvement in groundwater quality. Analytical results of groundwater samples taken prior to this remediation are not considered representative of current groundwater quality at the Site. For this reason, these data have not been used for the assessment of risks.

The data considered relevant to the baseline human health risk assessment are the analytical results for organic chemicals from groundwater and surface water monitoring conducted at the Site since remediation was completed. These data are presented in **Tables 3-1** to **3-3**.

A total of 17 groundwater sampling events have been conducted at the Site since completion of the soil remediation, all of which have been carried out by Komex. These have occurred on an approximately quarterly basis since June 2000. Analysis of volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), and PCBs has been routinely conducted on groundwater samples collected from the Site. **Table 3-1** presents the analytical results for organic chemicals in groundwater that have been detected above the method detection limit (MDL) on at least one occasion. Organic chemicals included in the groundwater analysis but not detected are presented in **Table 3-2**.

Surface water sampling of the small creek in the wetland area was conducted on one occasion from six points along the creek. These data are provided in **Table 3-3**.

A review of the reliability of these data is presented in the following sections.

3.1.3 DATA VALIDATION

Data validation is an independent, systematic, after-the-fact process of evaluating data and comparing the results to pre-established criteria. For this risk assessment, specific quality control indicators associated with the data were reviewed to determine whether the stipulated data quality objectives had been met. The objectives address five principal parameters: precision, accuracy, completeness, comparability, and representativeness. To verify that the objectives were met, field measurements, sampling and handling procedures, laboratory analysis and reporting, and nonconformance and discrepancies in the data were examined to determine compliance with the appropriate and applicable procedures. The procedures and criteria for validation are defined in the RI/FS Data Validation Program Guidelines, which are based on the U.S. EPA National Functional Guidelines for Data Review (U.S. EPA, 1988a, 1988b).

The validation process culminates in the assignment of a qualifier flag for each analyte defining the confidence level in the data. The measured chemical concentrations obtained during the investigative sampling, and used in the risk assessment, will be validated. Data that do not adequately meet the criteria addressed during data validation will not be used in the quantitative risk assessment (U.S. EPA, 1988a, 1988b, 1992c).

The analytical results are determined to be relevant to the scope of this risk assessment. Each of the 17 rounds of sampling conducted in that period have been performed by Komex. These data have been evaluated to assess suitability of use in the risk assessment. The evaluation has been conducted in two parts: (1) evaluation of sample collection procedures, and (2) evaluation of analytical data.

3.1.3.1 Evaluation of Sampling Procedures

The following documentation has been reviewed:

- Sampling protocols and quality assurance procedures;
- Groundwater monitoring reports;
- Field daily activity logs;
- Sample collection logs;
- Specific field forms for sample collection and handling;
- Chain-of-custody forms and requests for analysis;
- Field personnel training documents; and

• Variances, surveillance reports of field activities.

The 17 groundwater monitoring events conducted by Komex have an associated sampling and analysis plan and quality assurance project plan. The relevant documents for each monitoring event are listed in **Table A** below. These documents have been reviewed by the U.S. EPA and are considered suitable for the purposes of characterizing chemical concentrations in groundwater at the Site.

Table A: Sampling and Analysis Protocols

Groundwater Monitoring	Protocol Documents	
Event		
June 2000	Sampling and Analysis Plan (Komex, 1999a)	
September 2000	Quality Assurance Project Plan (Komex, 1999b)	
April 2001	Sampling and Analysis Plan (Komex, 2001b)	
July 2001	Quality Assurance Project Plan (Komex, 2001c)	
October 2001		
January 2002		
May 2002		
August 2002	Revised Work Plan (Komex 2002b)	
October 2002	Revised Sampling and Analysis Plan, (Komex, 2002c)	
February 2003	Revised Quality Assurance Project Plan, (Komex, 2002d)	
May 2003		

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Groundwater Monitoring	Protocol Documents (Cont'd)	
Event (Cont'd)		
August 2003	Sampling and Analysis Plan (Komex, 2003d)	
October 2003	Quality Assurance Project Plan (Komex, 2003e)	
February 2004		
May 2004		
August 2004		
November 2004		

The sampling and analysis protocols have been reviewed for the purposes of the human health risk assessment. The protocols are largely the same for every sampling event and are considered suitable for providing data for the purposes of this risk assessment. Full details of the sampling protocols are presented in the documents referenced in **Table A**. A summary of the sampling protocol used by Komex at the Site is given below (Komex, 2001b, 2001c, 2003d).

• Wells to be sampled are purged using a bailer or submersible pump until hydrogeochemical parameters have stabilized within 10%, a maximum of three well casing volumes have been purged or until the well becomes dry. Samples are taken once water levels have recovered 80%, or a minimum of two hours after purging in the event of slow recovery. Field and trip blanks and a sample duplicate are taken.

Examination of sample reports and field records shows that the sampling protocols have been followed correctly. These protocols are appropriate for the purposes of data collection for this risk assessment.

3.1.3.2 Analytical Data

Samples from the 17 groundwater monitoring events conducted by Komex were analyzed by Analytical Environmental Services in Atlanta for the following suite of compounds:

- VOCs in accordance with EPA Method 8260B;
- SVOCs in accordance with EPA Method 8270B; and
- PCBs in accordance with EPA Method 8082 (unfiltered and filtered).

The following analysis was conducted on surface water samples taken from the creek:

- VOCs in accordance with EPA Method 8260B;
- SVOCs in accordance with EPA Method 8270B; and
- PCBs in accordance with EPA Method 8082.

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The analysis has been conducted in accordance with U.S. EPA methods and the Komex Laboratory Quality Management Plan (LQMP). The LQMP describes the data validation requirements that the laboratory must adopt. The laboratory is required to report any non-conformances that may affect the accuracy or precision of the data.

The following key analytical data have been reviewed:

- Sample analytical results;
- Holding times;
- Surrogate recoveries;
- Matrix spikes, matrix spike duplicates¹;
- Blank evaluations;
- Internal standards;
- Instrument performance checks; and
- Initial and continuing calibrations.

Correspondence from the laboratory confirms that no significant problems were encountered during the laboratory analysis. A number of non-conformances were reported in the case narratives provided by the laboratory. Review of this correspondence indicates that the non-conformances were minor and that appropriate and timely action had been taken to rectify these. In summary, non-conformances generally comprised of documentation and sample labeling inconsistencies (6), analyte detected in method blanks (2), broken sample containers (8), hold times exceeded (14) and spike, surrogate, internal standard and/or laboratory control sample recoveries reported outside the acceptable limits (37). A list of non-conformances reported by the laboratory is provided in **Appendix A**.

Additional analysis was conducted by the U.S. EPA on selected samples taken in October 2002. Although this data cannot be fully validated, it has been included in the COPC selection basis as a conservative measure.

3.1.4 DATA USEABILITY SUMMARY

The analytical results for groundwater and surface water sampling are presented in **Tables 3-1** through **3-4**. Qualifiers have been assigned to data with quality control indicators below the acceptable performance criteria. All data not assigned qualifiers are of acceptable quality and

¹ Site specific MS/MSD samples collected by Komex since 2002 Prior to 2002, all MS/MSD analysis was conducted internally by the laboratory

will be used during COPC selection. Estimated quantitative results, such as those identified by a "J" qualifier, will be incorporated in COPC selection (U.S. EPA, 1992c). The "J" qualifier describes an estimated value for a tentatively identified chemical or one that is present but whose value is less than the required quantitation limit. Analytical results that are at or below detection limits are qualified with a "U" and will also be used in the risk analysis (EPA split samples). The "B" qualifier indicates that the analyte was found in the associated blank as well as in the qualified sample. Only data with a "B" qualifier was included in the risk assessment if the concentration in the sample exceeded ten times the maximum amount detected in the blank 51 sample results for bis(2-ethylhexyl) phthalate were assigned a "B" qualifier as bis(2-ethylhexyl) phthalate was also detected in field and/or equipment blanks for that sampling event. Two of the "B"-qualified bis(2-ethylhexyl) phthalate results were reported at ten times the maximum amount detected in the corresponding blank. Data found to be invalid was assigned an "X" qualifier and/or denoted in Table 3-1 with a "*" and was not used in the quantitative risk assessment. A single sample (WSW-1) collected on October 23, 2001 was flagged "**" because laboratory communication reports indicated that the result may have been attributed to laboratory cleaning agents. However, a corresponding laboratory blank sample was not available to confirm the reliability of the data and therefore, the data was included in the risk assessment.

A review of laboratory non-conformances (**Appendix A**) revealed a number of samples that exceeded holding times or reported spike recoveries outside acceptable limits (Section 3.1.3.2). Additionally, two sample results were assigned a "B" qualifier by the laboratory. However, although these non-conformances and data qualifiers may indicate some uncertainty (biased high or low) in the reported concentration of the chemical, it does not indicate uncertainty related to its assigned identity. Therefore, it was determined that these results were suitable for inclusion in the risk assessment. None of the data presented in **Tables 3-1** to **3-3** have an "X" qualifier, and therefore all the data in these tables are determined suitable for inclusion in the risk assessment, with the exception of the "B"-qualified data for bis(2-ethylhexyl) phthalate.

3.2 SELECTION OF COPC

COPC have been selected from all the compounds analyzed in groundwater samples from the Site. COPC have been selected by comparing the maximum concentrations in **Tables 3-1** and **3-2** with screening toxicity values. For compounds that have not been detected, the maximum MDL has been used as the screening concentration. The U.S. EPA Region 9 Preliminary Remediation Goals (PRG) (U.S. EPA, 2004a) have been used as toxicity screening values, where

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available. Note that for non-carcinogens, a value of one-tenth the PRG has been used to account for potential additivity of non-cancer health effects.

Details of the maximum concentrations, number of detections, and screening toxicity values are presented in **Tables 3-4 and 3-5**. Chemical analysis has been conducted for a total of 102 organic compounds. Twenty-nine organic compounds have been detected in groundwater samples collected from the Site. Of these, 17 had a maximum concentration in excess of the screening toxicity value and have been retained as COPC in the risk assessment (**Table 3-4**). A comparison of the MDLs with screening values was undertaken for the undetected organics. Of the undetected organics, 31 had a maximum MDL in excess of the screening toxicity value. These compounds have been retained as COPC in the risk assessment (**Table 3-5**). An additional four COPC, with no available screening toxicity values were conservatively retained as COPC but were not evaluated quantitatively in this risk assessment.

U.S. EPA Region 9 PRGs were not available for 11 of the undetected organic compounds. Therefore, where applicable, surrogate screening values were used. The PRG for naphthalene was applied as the surrogate screening value for 2-methylnaphthalene. The PRG for pyrene was applied as the screening value for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene and the PRG for methyl-iso-butyl ketone was applied for methyl-n-butyl ketone. The remaining chemicals: bis(2-Chloroethoxy) methane, 2-nitrophenol, 4-bromophenyl SIX 4-chlorophenyl phenyl ether, 4-nitrophenol and 4-chloro-3-methylphenol were not compared to any screening toxicity values. Four of these chemicals, bis(2-chloroethoxy) methane, methyl n-butyl ketone, 4-bromophenyl ether, 4-chlorophenyl phenyl ether and 4-chloro-3methylphenol, have been retained as COPC. However, quantitative evaluation of these four chemicals is not possible due to lack of adequate toxicity data currently available. Therefore, they have not been included in the risk calculations presented herein

Two of the above chemicals, 2- and 4-nitrophenol were evaluated qualitatively and subsequently were not be retained COPC. Nitrophenols are closely related chemicals with similar chemical and physical properties. Other than acutely lethal doses in animals, the ATSDR Toxicological Profile for nitrophenols does not list any oral studies for these two chemicals and the lethal doses are several orders of magnitude greater than the concentration used for screening at this Site (ATSDR, 1990). Currently, the ATSDR has not derived an oral MRL for these chemicals. The EPA has released a draft Drinking Water and Health Advisory for 4-nitrophenol. The Health Advisories are $800~\mu\text{g/L}$ for one-day, and $60~\mu\text{g/L}$ for a lifetime. However, EPA's IRIS states that, "a risk assessment for this substance is under review by an EPA workgroup" (U.S.EPA, 2003a). The EPA Health Advisories serve as guidance for levels of

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contaminants in drinking water which should not cause health effects for the specified time period. In consideration of this, based on the qualitative assessment, no adverse health effects are anticipated at this time given that these chemicals have not been detected in groundwater at the Site, and the concentrations used for screening (2-nitrophenol=1.36 μ g/L and 4-nitrophenol=7.92 μ g/L) are well below the EPAs draft lifetime health advisory of 60 μ g/L. Based on the qualitative evaluation, neither chemical has been included as a COPC.

In summary, a total of 52 chemicals have been retained as COPC (**Table B**). Screening values were not available for 4 of these chemicals and although they have conservatively been retained as COPC, there is inadequate data available to evaluate the risk associated with these chemicals quantitatively. There were 50 compounds that had maximum reported concentrations and or maximum MDLs below screening values and are not considered further.

Inorganic compounds were investigated during the initial RI work in the late 1980s and early 1990s and it was determined that the inorganic concentrations at the Site did not indicate the presence of contamination associated with the operations of MEW. (EarthTech 1990, U.S.EPA 1990 ROD). Based on this evaluation and at the direction of the agency, inorganic compounds are not listed as COPCs.

Table B: Chemicals of Potential Concern

Detected Organics	Undetected Organics	
1,1-Dichloroethane	1,1,2,2-Tetrachloroethane	Benzo(k)fluoranthene
1,2,4-Trichlorobenzene	1,1,2-Trichloroethane	Bis(2-Chloroisopropyl) Ether
1,2-Dichloroethene Total	1,2-Dichloroethane	Carbon Tetrachloride
1,3-Dichlorobenzene	1,2-Dichloropropane	Chlorodibromomethane
1,4-Dichlorobenzene	2,4,6-Trichlorophenol	Dibenzo(a,h)Anthracene
2-Chlorophenol	2,4-Dınitrotoluene	Dibenzofuran
Aroclor-1260	2,6-Dinitrotoluene	Hexachloro-1,3-Butadiene
Benzene	3,3-Dichlorobenzidine	Hexachlorobenzene
Bis(2-Chloroethyl) Ether	4,6-Dinitro-2-Methyl Phenol	Indeno(1,2,3-cd)Pyrene
Bıs(2-ethylhexyl)phthalate	Aroclor 1016	2-Methylnaphthalene
Bromodichloromethane	Aroclor-1221	Nitrobenzene
Chlorobenzene	Aroclor-1232	Pentachlorophenol
Chloroform	Aroclor-1242	Vinyl Chloride
Naphthalene	Aroclor-1248	Bis (2-Chloroethoxy) Methane *
N-Nitrosodı-n-propylamıne	Aroclor-1254	4-Bromophenyl Phenyl Ether *
Tetrachloroethene	Benz(a)anthracene	4-Chlorophenyl Phenyl Ether *
Trichloroethene	Benzo(a)pyrene	4-Chloro-3-Methylphenol *
	Benzo(b)fluoranthene	

^{*} Quantitative evaluation of the risks associated with these chemicals is not possible due to the absence of available data. These chemicals have not been included in the risk calculations but are discussed further in the uncertainty analysis of the report.

4 TOXICITY ASSESSMENT

The objective of the toxicity assessment is to provide information on the toxic effects of exposure to chemicals. More specifically, this step of the risk assessment provides a quantitative estimate of the relationship between exposure and severity or probability of human biological effects for each COPC.

Section 4.1 describes how toxicity values are established and used for non-carcinogenic COPC. **Section 4.2** presents a similar discussion of carcinogenic COPC. **Section 4.3** describes how dermal exposures are quantified. Finally, the toxicity of the identified COPC is discussed in **Section 4.4**.

Relevant carcinogenic and non-carcinogenic toxicity data have been obtained from the following sources (in descending order of preference):

- Tier 1: IRIS on-line database (U.S. EPA, 2003a);
- Tier 2: EPA Peer Reviewed Toxicity Values (PRTV);
- Tier 3: Health Effects Assessment Summary Tables (HEAST), draft IRIS assessments, Agency for Toxic Substances and Disease Registry (ATSDR) toxicity profiles, and California Environmental Protection Agency (Cal-EPA) values.

4.1 NONCARCINOGENIC CHEMICALS

For the non-carcinogenic effects of chemicals, U.S. EPA assumes a dose exists below which no adverse health effects will be seen (U.S. EPA, 1989a). Below this "threshold," it is believed exposure to a chemical can be tolerated without adverse effects, and the body burden is not increased. Toxic effects become manifest only when physiologic protective mechanisms are overcome by exposure doses above the threshold.

The reference dose (RfD), expressed in units of milligrams per kilogram body weight-day (mg/kg-d), represents the daily intake (averaged over a year) of a chemical per kilogram of body weight that is below the effect threshold for that chemical. In essence, the RfD represents the receptor-specific threshold dose. In addition, U.S. EPA assumes non-carcinogenic exposure doses are not cumulative from age group to age group over a lifetime of exposure (U.S. EPA, 1989a). An RfD is specific to the chemical, route of exposure, and duration over which the exposure occurs.

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The U.S. EPA reviews all relevant human and animal studies for each chemical and selects the studies pertinent to the derivation of specific RfDs. Each study is evaluated to determine the no-observable-adverse-effect level (NOAEL).or, if data are inadequate for such a determination, the lowest-observable-adverse-effect level (LOAEL). The NOAEL corresponds to the dose (mg/kg-d) that can be administered over a lifetime without inducing observable adverse effects. The LOAEL corresponds to the lowest daily dose (mg/kg-d) that can be administered over a lifetime that induces an observable adverse effect. The toxic effect characterized by the LOAEL is referred to as the "critical effect."

To derive an RfD, the NOAEL (or LOAEL) is divided by uncertainty factors to ensure that the RfD will be protective of human health. Uncertainty factors are applied to account for:

- 1. Extrapolation of data from laboratory animals to humans (interspecies extrapolation);
- 2. Variation in human sensitivity to the toxic effects of a chemical (intraspecies differences);
- 3. Derivation of a chronic RfD based on a subchronic rather than a chronic study; and
- 4. Derivation of an RfD from the LOAEL rather than the NOAEL.

Each of these uncertainties usually represents a factor of 10. In addition to these uncertainty factors, modifying factors between 0 and 10 may be applied to reflect additional qualitative considerations in evaluating the data (U.S. EPA, 1989a).

The toxicological data for inhalation exposure is often presented as a reference concentration (RfC) and has units of milligrams per cubic meter (mg/m³). In essence, the RfC represents the receptor-specific threshold concentration for the COPC in air. Below this concentration, no adverse effect is expected to occur. The following equation has been used to convert reference concentrations to reference doses:

$$RfD_{inh} = \frac{RfC * IR}{RW} \tag{4-1}$$

where,

RfD_{inh} = reference dose for inhalation (mg/kg-d)

Rfc = reference concentration (mg/m^3)

IR = inhalation rate (assumed to be $20 \text{ m}^3/\text{d}$)

BW = body weight (assumed to be 70 kg)

The non-carcinogenic risk associated with a chemical exposure is expressed as the hazard quotient (HQ). The HQ is a ratio of the estimated chemical intake, based on the measured or

calculated exposure concentration for a chemical (dose), divided by the appropriate oral or inhalation RfD. If the HQ exceeds 1, some harmful effect may occur or the threshold dose may be exceeded. If the HQ is equal to or less than 1, the exposure level is not likely to cause adverse effects. If exposure to multiple chemicals occurs, the potential for harmful effects is assessed by summing the HQs and is designated as the hazard index (HI).

In keeping with U.S. EPA guidance (1989a), all non-carcinogenic risk will be considered additive for individual receptors. Since the non-carcinogenic COPC under investigation at the Site are associated with various adverse effects on distinct target organs and systems, the assumption of additivity of effects may overstate the potential for harmful effects. On the other hand, the potential synergistic effects of two or more COPC must also be recognized. That is, the combined effects of exposure to two COPC may be worse than exposure to either COPC alone because of interactions.

4.2 CARCINOGENIC CHEMICALS

The incremental lifetime cancer risk (ILCR) from a carcinogen is calculated as a product of the reasonable maximum daily intake (mg/kg-d) and the cancer slope factor (CSF). U.S. EPA's model of carcinogenesis assumes the relationship between exposure to a carcinogen and cancer risk is linear over the entire dose range, except at very high doses (U.S. EPA, 1989a). This linearity assumes that there is no threshold-of-exposure dose below which harmful effects will not occur. Because of this, carcinogenic effects are considered to be cumulative across age groups when considering lifetime exposures.

CSFs are upper-bound (95 percent upper confidence limit [UCL]) estimates of the increased cancer risk per unit dose, in which risk is expressed as the probability that an individual will develop cancer within his or her lifetime as the result of exposure to a given level of a carcinogen. All cancers or tumors are considered whether or not death occurs as a result. This approach is inherently conservative because of the no-threshold assumption and the use of the 95 percent UCL of the estimated slope of dose versus cancer risk.

In addition to the CSF, the toxicity information considered in the assessment of potential carcinogenic risks includes a weight-of-evidence classification. The U.S. EPA groups chemicals according to their potential for carcinogenic effects based on clinical evidence (U.S. EPA, 1989a):

- Group A Human carcinogen
- Group B Probable human carcinogen
- Group C Possible human carcinogen

- Group D Insufficient data to classify as a human carcinogen
- Group E Not a human carcinogen

The primary source for toxicological reference values is the IRIS (U.S. EPA, 2000).

4.3 QUANTIFICATION OF DERMAL EXPOSURE RISKS

Dermal RfDs and CSFs are traditionally derived from the corresponding oral values (U.S. EPA, 2004b) using the following equation:

$$SF_{der} = \frac{SF_o}{ABS_{GI}} \tag{4-2}$$

$$RfD_{d:r} = RfD_o * ABS_{GI} \dots (4-3)$$

where,

 $. Sf_{der} = dermal slope factor (mg/kg-d)^{-1}$

 $Sf_0 = \text{oral slope factor } (mg/kg-d)^{-1}$

ABS_{GI} = fraction of chemical absorbed in the gastrointestinal tract (dimensionless)

 $RfD_{der} = dermal reference dose (mg/kg-d)$

RfD_o = oral reference dose (mg/kg-d)

The U.S. EPA RAGS E document (U.S. EPA, 2004b) has been used to determine the fraction of chemical absorbed in the gastrointestinal tract for each COPC. These values are presented in **Table 4-1**.

4.4 TOXICITY OF IDENTIFIED COPC

Toxicity profiles for the 52 COPC are presented in **Appendix B**. Toxicity data for the 48 COPC with available toxicity data are listed in **Tables 4-1** through **4-4**. Thirty-seven COPC have a carcinogenic group rating of C (possible human carcinogen) or above. Trichloroethene (TCE) has not been given a carcinogenic group rating. However, according to the "Guidelines for Carcinogen Risk Assessment (Draft)" (U.S. EPA, 1999), TCE is characterized as highly likely to produce cancer in humans. The COPC considered carcinogens for this risk assessment are listed in **Table C**.

The U.S. EPA has assigned seven compounds a carcinogenic group rating of D for both inhalation and ingestion pathways; that is, there is insufficient data to classify these compounds

as carcinogens. No classification is given by the U.S. EPA for the carcinogenicity of five compounds. For the purposes of this risk assessment, these compounds are considered non-carcinogens. The COPC considered non-carcinogens for this risk assessment are listed in **Table C**.

All COPC are considered to have non-carcinogenic effects, and therefore oral, dermal, and inhalation reference doses have been derived for all 48 compounds, where data are available. These values have been derived using the hierarchy given above and are presented in **Tables 4-1** and **4-2**. There is insufficient human or animal data to derive an oral reference dose for 13 chemicals and/or an inhalation reference dose for 37 chemicals. Note that in order to maintain a conservative approach to the assessment, the oral reference dose for cis 1,2-dichloroethene has been used to represent total 1,2-dichloroethene.

Oral, dermal, and/or inhalation cancer slope factors have been derived for the 37 carcinogenic COPC using the hierarchy of sources given above. These values are presented in **Tables 4-3** and **4-4**. There is insufficient human or animal data to derive an oral slope factor for three compounds: naphthalene, chloroform, and 1,1-dichloroethane. Likewise, there is insufficient data to derive an inhalation slope factor for 10 compounds as shown on **Table 4-4**.

The U.S. EPA recommends using a range of cancer slope factors for assessing risks from TCE (U.S. EPA, 2001b). Three slope factors are quoted in **Tables 4-3** and **4-4**: the National Center for Environmental Assessment original provisional value (0.006 mg⁻¹.kg.d; U.S. EPA, 1987), and the range of values quoted in the U.S. EPA's draft values for external review (0.02 to 0.4 mg⁻¹.kg.d; U.S. EPA, 2001b).

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Table C: Carcinogenic and Non-Carcinogenic COPC

Carcinogens

Chemical	Classification	Chemical	Classification
Tetrachloroethene	C -B2 Continuum	Aroclor-1254	B2
Trichloroethene	C -B2 Continuum	Aroclor-1260	B2
1,1,2,2-Tetrachloroethane	С	Benz(a)anthracene	B2
1,1,2-Trichloroethane	С	Benzo(a)pyrene	B2
1,1-Dichloroethane	С	Benzo(b)fluoranthene	B2
1,4-Dichlorobenzene	С	Benzo(k)fluoranthene ***	B2
Chlorodibromomethane	С	Bis (2-ethylhexyl) phthalate	B2
Hexachloro-1,3-Butadiene	С	bis(2-Chloroethyl) Ether	B2
Naphthalene	С	Bromodichloromethane	B2
1,2-Dichloroethane	B2	Carbon Tetrachloride	B2
1,2-Dichloropropane	B2	Chloroform	B2
2,4,6-Trichlorophenol	B2	Dibenzo(a,h) Anthracene *** `	B2
2,4-Dinitrotoluene	B2	Hexachlorobenzene	B2
2,6-Dinitrotoluene	B2	Indeno(1,2,3-cd)Pyrene ***	B2
3,3-Dichlorobenzidine	B2	Nitrosodi-n-propylamine	B2
Aroclor-1221	B2	Pentachlorophenol	B2
Aroclor-1232	B2	Benzene	Α
Aroclor-1242	B2	Vinyl Chloride	Α
Aroclor-1248	B2		

Non-Carcinogens

Chemical	Classification	Chemical	Classification
2-Chlorophenol	Not Known	1,2-dichloroethene (cis)	D
4,6-Dinitro-2-Methyl Phenol	Not Known	1,2-dichloroethene (trans)	D
Aroclor-1016	Not Known	1,2,4-trichlorobenzene	D
bis(2-Chloroisopropyl) Ether	Not Known	1,3-Dichlorobenzene	D
Methylnaphthalene	Not Known	Chlorobenzene	D
Trichloroethene	Highly Likely	Dibenzofuran	D
Trichloroethene 1	Highly Likely	Nitrobenzene	D

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5 CONCEPTUAL EXPOSURE MODEL

The conceptual exposure model (CEM) provides the basis for a comprehensive evaluation of the risks to human health by identifying the mechanisms through which receptors may be exposed to residual COPC. The CEM traces the COPC in a logical flow from their sources through release mechanisms and exposure routes to the potentially affected receptors.

Of particular importance, the CEM identifies which exposure routes are complete and significant under the given land use. These significant pathways are used in the quantitative risk assessment for each receptor. The CEM also facilitates the analysis and screening of exposure pathways likely to pose only minor risks.

This section presents the CEM developed for the quantification of potential future risks associated with impacted groundwater at the MEW Site Section 5.1 discusses the future land use of the Site and the possible receptor population. Section 5.2 discusses the use of "reasonable maximum exposure" for assessing risks. Section 5.3 presents the CEM.

5.1 FUTURE LAND USE AND ASSOCIATED RECEPTOR POPULATION

The MEW Property is situated in a predominantly commercial area next to a wetland. The Cape Girardeau City Plan shows that the MEW Property has an "M2" building zone classification, indicating that only heavy industrialized uses are currently permitted (current zoning for the City of Cape Girardeau; Brown, 2003). The adjoining wetland area has an "M1" building zone classification, indicating that only light industrial uses are currently permitted in this area. Under this zone classification, dwellings are permitted only if a special use permit is granted.

Deed restrictions will be employed at the Property to ensure that future land use on Site remains industrial or commercial and that groundwater beneath the Site cannot be used. For the purposes of the risk assessment, future land use is assumed to be commercial for the MEW Property.

Development constraints associated with the wetland are likely to mean that the future use of this area will remain unchanged; however, to ensure that the assessment of risks is conservative, the assumption is made that construction of buildings could occur on this land. Allowance is made for a special permit being granted that could allow a residential property to

be constructed on this land. For the purposes of this risk assessment, a potential future use for off-Site areas is assumed to be residential.

Given the potential future land uses described above, four receptor populations will be considered: the on-Site adult worker, the off-Site adult construction worker, the off-Site child resident (between the ages of 0 and 6 years), and the off-Site adult resident.

Consideration is also given to trespassers who could be exposed to potentially impacted water in the creek. As a conservative measure, the off-Site trespasser is assumed to be the same receptor as the off-Site resident and, for this reason, these two receptor populations are considered one.

Child receptors are assumed to be in residence at the Site for six years. Adult residents are assumed to be in residence for 30 years and on-Site workers for 25 years. Construction workers are assumed to be on-Site for one year. Risks will be assessed to adult workers on the MEW Property, potential off-Site construction workers, and residents off-Site.

5.2 REASONABLE MAXIMUM EXPOSURE

U.S. EPA (1989a) recommends the use of reasonable maximum exposure (RME) to express the highest exposure that could reasonably occur at the Site. As a conservative estimate, the RME is within the range of possible exposures but higher than the typical or average exposure. RMEs are estimated for individual pathways. If a population is exposed to more than one pathway, the sum of the exposures across pathways also represents the RME (U.S. EPA, 1989a).

Populations potentially affected by Site COPC include people of various ages and lifestyles who live or conduct business at or near the Site. Instead of estimating health impacts to a specific individual, risk assessments focus on potential health effects to representative receptor groups. Each receptor evaluated in this work plan has been developed to conservatively represent the upper-bound exposures to a group of people that have similar lifestyles or perform similar daily activities. If the resultant risk to the selected receptor is determined to be acceptable, then it is likely that all other receptors within the group with lesser exposures will also be acceptable.

5.3 IDENTIFICATION OF COMPLETE EXPOSURE PATHWAYS

Four elements must be present for an exposure pathway to be deemed complete:

- 1. COPC source;
- 2. Release mechanism;

- 3. Exposure pathway; and
- 4. Receptor.

5.3.1 COPC SOURCES

Discussion of COPC sources provides a starting point for the development of the exposure pathways. The primary original source of organic COPC is believed to be a small ditch with no apparent off-Site outlet that was approximately orientated from the northeast of MW-14 to the southeast of the MW-3, MW-11, and MW-11A cluster of wells. This ditch was removed during soil remediation.

Remediation conducted in 1999 and 2000 removed impacted material down to a maximum depth of 27 feet (8.2 m) bgs. Soils were remediated to a concentration of 10 ppm PCBs at the surface and with depth.

Groundwater analytical results show that the groundwater at the Site was impacted with chlorinated hydrocarbons (chlorobenzenes, chloroalkanes, and chloroalkenes), benzene, and PCBs. The highest concentrations of chlorobenzenes and benzene have been found in wells located in the southeastern corner of the Site, where concentrations of up to 3,200 micrograms per liter (μ g/L) chlorobenzene, 120 μ g/L dichlorobenzene, and 83 μ g/L benzene have been detected. Chloroalkanes and chloroalkenes have been detected in the highest concentrations in the central portion of the Site, where concentrations of up to 31 μ g/L have been detected (1,1 dichloroethane).

PCB Aroclor 1260 has been detected in monitoring wells in the southeast corner of the Site, up to a concentration of 110 μ g/L in unfiltered samples. Concentrations of PCBs in filtered groundwater samples (dissolved phase PCBs) have only been detected in one well (MW-11, up to 4.5 μ g/L Aroclor 1260). PCBs in filtered samples have not been detected in this well in the last 17 monitoring events.

Bis (2-ethylhexyl) phthalate has been detected sporadically within wells on the MEW Property and in wells in the wetland area. The highest concentrations have been detected in wells MW-11A and WSW-1 which are screened within the deep bedrock zone, where up to 120 μ g/L have been detected. This compound has also been detected in a number of field and equipment blanks and it is considered likely that the presence of this compound in groundwater samples is due to the use of plastic materials used for sampling and not as a result of the previous land-use on the MEW Property. As discussed in **Section 3.2**, this chemical has been retained as a COPC to maintain a conservative approach to the risk assessment.

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5.3.2 RELEASE MECHANISMS

The release mechanism for COPC sorbed to soil entering groundwater is leaching. The leaching of chemicals from the soil sorbed phase to the dissolved phase is a function of the properties of the soil and the chemical. For organic compounds, the solubility and organic carbon partition coefficient (K_{∞}) of the chemical and the fraction of organic carbon of the soil (f_{∞}) affect the leaching potential.

In the vadose zone, leaching occurs by the infiltration of precipitation through the soil source zone, which carries chemicals in the dissolved phase to the groundwater table. Below the water table, chemicals will leach directly from contaminated soil into groundwater.

5.3.3 SIGNIFICANT EXPOSURE PATHWAYS

This section discusses the significance of each exposure pathway considered at the onset of the risk assessment and gives the rationale for the inclusion or exclusion of each in the final determination of risk. **Figure 5-1** summarizes the identified significant pathways at the Site and their relationships to the previously discussed COPC sources.

5.3.3.1 Ingestion Exposure Pathways

These exposure pathways include the most likely routes by which a receptor may ingest COPC originating from the Site. The following ingestion exposure pathways relevant to groundwater sources were reviewed for inclusion in the risk assessment:

- Ingestion of groundwater from water supply;
- Incidental ingestion of groundwater in the wetland area; and
- Incidental ingestion of groundwater discharging to surface water.

The properties in the vicinity of the Site are currently supplied with water from the Cape Girardeau Municipal Supply. There are currently no wells used for water supply at or near the Site. As discussed in **Section 5.1**, future use of groundwater at the MEW Property will not be permitted by way of a deed restriction. The ingestion of groundwater from water supply will therefore not be evaluated further for on-Site receptors.

The future use of off-Site groundwater for domestic supply is considered possible though unlikely. The ingestion of groundwater from water supply will therefore be further evaluated for off-Site receptors.

Groundwater from the Site is migrating southeast from the Property toward the wetland area and is likely discharging to the creek (**Section 2.5**). The incidental ingestion of groundwater discharging to the creek is therefore considered a potential pathway for off-Site receptors. Likewise, the incidental ingestion of groundwater in the wetland area is also considered a potential pathway for the off-Site construction worker.

The use of groundwater for irrigation or as drinking water for animals could present a risk to humans via the ingestion of animal or arable produce. As discussed in **Section 5.1**, the adjoining wetland area has an "M1" building zone classification, indicating that only light industrial uses are currently permitted in this area. The use of groundwater in the wetland area for irrigation or drinking water for animals is therefore not considered likely, and these pathways have not been considered further.

5.3.3.2 Inhalation Exposure Pathways

Exposures via the inhalation pathways consist of COPC transported by air eventually reaching a receptor who inhales airborne vapor, gases, and/or suspended particulate. The following inhalation pathways relevant to groundwater sources were reviewed for inclusion in the risk assessment:

- Inhalation of soil vapor that migrates to indoor air; and
- Vapor inhalation from tap water.

Both pathways will be evaluated further in the risk assessment; however, as discussed in **Section 5.1**, the extraction of groundwater from the MEW Property will not be permitted, and therefore the vapor-inhalation-from-tap-water pathway will only be considered for off-Site receptors.

The inhalation of soil vapor that migrates to outdoor air pathway will not be evaluated further in the risk assessment. Exposure from this pathway is unlikely to be significant relative to that from the inhalation of indoor air. This is because any subsurface chemicals that volatilize and migrate into the outdoor air will be significantly diluted with atmospheric air.

5.3.3.3 Dermal Contact Exposure Pathways

This group of pathways encompasses receptor activities that result in direct contact with groundwater containing COPC. The following dermal contact exposure pathways relevant to groundwater sources were reviewed for inclusion in the risk assessment:

• Dermal contact with groundwater discharging to surface water;

- Dermal contact with groundwater in the wetland area; and
- Dermal contact with groundwater extracted for domestic supply.

These pathways will be evaluated further in the risk assessment; however, as discussed in **Section 5.1**, the extraction of groundwater from the MEW Property will not be permitted, and therefore the dermal-contact-with-tap-water pathway will only be considered for off-Site receptors.

Dermal contact with groundwater in the wetland area will only be evaluated for the off-Site construction worker receptor.

5.3.4 POTENTIALLY EXPOSED POPULATIONS

Persons who work at or live near the Site are the most likely to be exposed to its residual COPC. To provide worst-case risk estimates for planning and comparison purposes, the risk assessment will evaluate the potential health effects to four future RME receptors: the on-Site adult worker, the off-Site adult construction worker, the off-Site child resident, and the off-Site adult resident.

It is important to note if the associated risks to the proposed future receptors are acceptable, then other, lesser exposures such as current Site use (eg commercial worker on Site or trespasser) are also acceptable. Receptors were chosen to ensure that the estimated risk values protect human health and that the actual risks do not exceed the predicted values. The development and selection of these receptors was based on the RME concept discussed in **Section 5.2** and regulatory guidance.

Descriptions of the types, locations, and lifestyles of these populations are provided below.

5.3.4.1 Off-Site Child Residential Exposure

The hypothetical residential receptor represents a conservative worst-case future land use. The child is assumed to be at the off-Site property south of the MEW Site for 24 hours a day, 7 days a week, 350 days per year, for the first 6 years of their life. Six significant exposure pathways are applicable to this receptor:

- Inhalation of COPC that have volatilized from groundwater and have migrated from the subsurface through the floor of the house;
- Inhalation of volatilized COPC from tap water obtained from a domestic water supply well;
- Ingestion of tap water obtained from a domestic water supply well;

- Dermal contact with tap water obtained from a domestic water supply well;
- Incidental ingestion of groundwater (that has discharged to surface water); and
- Dermal contact with groundwater (that has discharged to surface water).

5.3.4.2 Off-Site Adult Residential Exposure

The hypothetical residential receptor represents a conservative worst-case future land use. The adult is assumed to be at the off-Site property south of the MEW Site for 24 hours a day, 7 days a week, 350 days per year, for 24 years of their life. Six significant exposure pathways are applicable to this receptor:

- Inhalation of COPC that have volatilized from groundwater and have migrated from the subsurface through the floor of the house Inhalation of volatilized COPC from tap water obtained from a domestic water supply well;
- Ingestion of tap water obtained from a domestic water supply well;
- Dermal contact with tap water obtained from a domestic water supply well;
- Incidental ingestion of groundwater (that has discharged to surface water); and
- Dermal contact with groundwater (that has discharged to surface water).

5.3.4.3 On-Site Adult Worker Exposure

The hypothetical commercial receptor represents a conservative worst-case future land use for the MEW Property. The adult worker receptors are assumed to work at the property where the Site is currently located for a period of 25 years of their lifetime and to be directly exposed to chemicals in groundwater indirectly via inhalation of VOC vapors that have migrated from the underlying groundwater into the ambient/indoor air.

The worker is assumed to be at the Site for 10 hours a days, 5 days a week, 250 days per year, for 25 years. One significant exposure pathways is applicable to this receptor:

• Inhalation of COPC that have volatilized from groundwater and have migrated from the subsurface through the floor of the building.

5.3.4.4 Off-Site Adult Construction Worker Exposure

The hypothetical construction worker receptor represents a conservative worst-case scenario for future construction workers involved with excavations in the wetland area. The construction worker receptor is assumed to be directly exposed to chemicals in groundwater via dermal contact and incidental ingestion while working in/with excavations. The construction worker is

assumed to be at the Site for 12 hours a day, 250 days per year, for 1 year. Two significant exposure pathways are applicable to this receptor:

- Incidental ingestion of groundwater that has entered the excavation in the wetland area; and
- Dermal contact with groundwater that has entered the excavation in the wetland area.

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6 EXPOSURE POINT CONCENTRATIONS

To quantify exposures, statistically representative concentrations must be estimated for COPC in the impacted environmental media that is in direct contact with the receptor. The point of contact with impacted environmental media is termed the "point of exposure (POE)." The CEM has identified a number of potential points of exposure. These are:

- Indoor air in a potential future commercial building located on the Property;
- Indoor air in a potential residential building located off Site to the southeast of the Property;
- Tap water sourced from a potential future well located off-Site to the southeast of the Property;
- Groundwater that has entered an excavation in the wetland area; and
- Surface water in the creek that crosses the wetland area to the southeast of the Site.

COPC concentrations for the tap water POE will largely depend on the location of any future well. Wells located close-to and directly down hydraulic gradient from the COPC source area are likely to have higher concentrations than those located further from the Site. In recognition of this fact, the risk to future residential receptors has been assessed for three different hypothetical well locations. The locations of these wells have been chosen using the predicted COPC plume maps from the groundwater modeling (**Appendix C**; Komex, 2005f):

- Hypothetical Well A: This well is located on the eastern side of the Morrill Property, close to the now-abandoned well MW-8. This well is directly down hydraulic gradient of the source area and is situated centrally within the modeled COPC plume;
- Hypothetical Well B: This well is located directly down hydraulic gradient from the Site next to Wilson Road and is situated centrally within the modeled COPC plume; and
- Hypothetical Well C: This well is located to the east of the existing monitoring wells MW-17A and MW-17B.

The locations of Hypothetical Wells A and B have been chosen such that they represent worst-case off-Site concentrations. Two wells are required to do this because the source areas differ between COPC. Hypothetical Well A represents worst-case concentrations for the majority of COPC. For the remaining COPC, worst-case concentrations occur in Hypothetical Well B. The location of Hypothetical Well C has been chosen such that it lies outside the modeled organic COPC plume. The locations of the hypothetical wells are shown on **Figure 6-1**.

Given that the maximum concentrations of COPC do not always occur at the same Hypothetical Well location a fourth scenario has been created; Hypothetical Well D. This scenario uses the maximum predicted concentration from Hypothetical Wells A and B for each COPC and represents worst-case conditions for all COPC. It should be noted that due to the fact that not all COPC have the same source area, it is highly unlikely that this scenario could occur. However, it has been included in the risk assessment as a conservative measure.

The points of exposure listed above are characterized as indirect, meaning exposures occur away from or in a different medium than the source. POE concentrations have been estimated from measured data or from fate and transport modeling. Fate and transport modeling has been used to estimate POE concentrations where measured data is either unavailable or considered insufficiently conservative.

Groundwater fate and transport modeling has been used to predict the exposure point concentrations of organic COPC in groundwater in the wetland areas, surface water within the wetland creek and within tap water from the Hypothetical Wells.

The results of the groundwater modeling have been used for estimating POE concentrations for organic COPC for the following reasons:

- 1. The concentrations of organic COPC in off-Site wells may not be representative of actual COPC concentrations in the groundwater off-Site. As indicated by the fracture network modeling (**Appendix C**), there remains the possibility that elevated concentrations of COPC could exist within fractures that have not been intercepted by the monitoring wells in the wetland area. The results of the groundwater modeling predict higher concentrations in the wetland area than those measured within off-Site wells for all organic COPC. For this reason, the use of the groundwater modeling results, as opposed to measured concentrations in the wetland area is considered more conservative. For example, the highest concentrations of TCE and chlorobenzene measured in groundwater in the wetland area since 2000, have been reported at 9.9 μg/L and 2.9J μg/L, respectively. The maximum simulated RME concentrations for hypothetical wells A and B are 15.25 μg/L for TCE and 2,901 μg/L for chlorobenzene.
- 2. Only one set of surface water samples has been collected from the creek (**Table 3-3**). No COPC were detected in these samples with the exception of bis (2-ethylhexyl) phthalate (up to $8.8J~\mu g/L$) which was detected at a higher concentration (up to $28~\mu g/L$) in an equipment blank analyzed during the same sampling event. However, this data set is considered insufficient to estimate statistically representative COPC concentrations at this POE. The

results of the groundwater modeling are considered to provide a conservative estimate of possible concentrations of COPC at this POE.

Direct measurement of indoor air concentrations is not possible for future scenarios and therefore vapor transport modeling has been used to predict COPC POE concentrations for the inhalation of indoor air. The Johnson-Ettinger model (U.S. EPA, 2003c) has been used to predict potential future indoor air concentrations on and off the MEW Property arising from impacted groundwater.

Groundwater source concentrations are required for use in the Johnson-Ettinger model. The measured groundwater concentrations on-Site have been used to calculate 95 percent UCL values which were subsequently used as source concentrations for the prediction of indoor air concentrations in future buildings on the MEW Property. For future off-Site buildings on the wetland area, the predicted concentrations of COPC in shallow groundwater in the wetland area have been used for the Johnson-Ettinger modeling. As discussed above, the results of the groundwater modeling provide a more conservative estimate of groundwater concentrations in the wetland area than those measured. For this reason, the concentrations in the wetland area predicted by the groundwater model have been used as the source concentrations for the off-Site Johnson-Ettinger modeling.

Section 6.1 discusses the statistical methods used in the evaluation of groundwater analytical data for estimating statistically representative groundwater source concentrations for use in the on-Site Johnson-Ettinger model. **Section 6.2** presents the fate and transport methodologies used for predicting POE concentrations from indirect exposures. A summary of the POE concentrations used for the risk assessment is given in **Section 6.3**.

6.1 STATISTICAL EVALUATION OF ANALYTICAL DATA

Statistical methods have been used to evaluate the numerous analytical results from the Site groundwater sampling to: 1) characterize the statistical distribution of COPC, and 2) develop source-term concentrations for fate and transport modeling. The rationale used to develop this methodology and the statistical techniques are based on the following sources:

- RAGS, Volume I Human Health Evaluation Manual, Part A (U.S. EPA, 1989a);
- Statistical Methods for Evaluating the Attainment of Cleanup Standards, Volume 1 (U.S. EPA, 1989b);
- Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites (U.S. EPA, 2002c);

- Statistical Methods for Environmental Pollution Monitoring (Gilbert, 1987); and
- Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities (U.S. EPA, 1989c).

6.1.1 SELECTION OF REPRESENTATIVE DATA

The concentrations of COPC detected in wells on the MEW Property vary temporally and spatially across the Site. To allow RME to be quantified (Section 5.2), reasonable maximum concentrations of COPC must be estimated. For this reason, the statistical analysis has been preformed on the groundwater analytical data from wells where the maximum concentrations of COPC have been detected.

Examination of the groundwater analytical data (**Table 3-1**) shows that the maximum concentrations of the chlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2-chlorophenol, N-nitrosodi-n-propylamine, and benzene have consistently been detected in well MW-12. The data from this well have been used to estimate reasonable maximum source concentrations for these compounds.

The compound 1,2,4-trichlorobenzene has been detected at similar concentrations in wells MW-4, MW-7, MW-10 and MW-12. The data from these wells have been used to estimate reasonable maximum source concentration for this compound.

The maximum concentrations of TCE in groundwater on the MEW Property have consistently been detected in well MW-10. The data from this well have been used to estimate reasonable maximum source concentrations for TCE on the MEW Property.

The maximum concentrations of total 1,2-dichloroethene in groundwater on the MEW Property have consistently been detected in well MW-11. The data from this well have been used to estimate reasonable maximum source concentrations for this compound on the MEW Property. The maximum concentrations of PCE have consistently been detected in well MW-4. The data from this well have been used to estimate reasonable maximum source concentrations for PCE.

The maximum concentrations of bis (2-ethylhexyl) phthalate have consistently been detected in well MW-11A. The data from this well have been used to estimate reasonable maximum source concentration for this compound.

The maximum concentrations of PCB Aroclor 1260 in unfiltered samples have been detected in wells MW-5 and MW-11. The data from these wells have been used to estimate reasonable maximum source concentration for this compound. The maximum concentrations of PCB

Aroclor 1260 in filtered samples have been detected in well MW-11. The data from this well has been used to estimate reasonable maximum source concentration for this compound.

The only detectable concentration of Bis (2-chloroethyl) ether on-Site was detected in well MW-4. The data from this well have been used to estimate the reasonable maximum source concentration for this compound.

The only detectable concentration of naphthalene on-Site was detected in well MW-3. The data from this well have been used to estimate the reasonable maximum source concentration for this compound.

The only detectable concentrations of chloroform on-Site have been detected in well WSW-1. The data from this well have been used to estimate the reasonable maximum source concentration for this compound.

The compound 1,1-dichloroethane has been detected at similar concentrations in wells MW-4 and MW-10. The data from these wells have been used to estimate the reasonable maximum source concentration for this compound.

Note that 35 of the organic COPC have not been detected in any monitoring well. For the 31 compounds that are being quantitatively evaluated, they have been retained as COPC because the maximum MDL is in excess of the risk screening value (Section 3.2). For compounds that have not been detected, one-half of the maximum MDL has been used as the source concentration.

For each groundwater COPC that has been detected on-Site, statistical summaries have been developed using the U.S. EPA software ProUCL. These summaries include the arithmetic mean, minimum measured concentration, maximum measured concentration, standard deviation, and 95 percent UCL of the mean. Statistical summaries are presented in **Table 6-1**, and the process used to derive them is described below. Full statistical outputs from the ProUCL analysis are provided in **Appendix D**.

6.1.2 DETERMINATION OF DATA DISTRIBUTION

Fundamental to the statistical analysis is establishing the data set distribution. The distribution must be determined prior to the application of any statistical methods. This minimizes the effect of data biasing.

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Figure 6-2 shows time series plots of detected organic COPC concentrations in the wells where the maximum concentrations have been detected. Temporal variation is observed, but the long-term trend appears to be stable for most COPC.

The U.S. EPA software ProUCL has been used to assess the distribution type of the source concentrations for each detected organic COPC. The data selected for analysis were chosen to represent source concentrations. For detected organic compounds the data from wells where the highest concentrations were detected were selected for analysis (Section 6.1.1).

The data sets used to conduct the statistical analysis contain numerous duplicate samples. Where duplicates have been taken, the highest concentration between the duplicate and its pair has been used to represent that sampling event. This avoids the statistical analysis being skewed due to duplicate samples. For the one sampling event, October 2002, in which the U.S. EPA provided split sample results the data were treated in accordance with the treatment of duplicate samples described above.

The results of this statistical analysis show that the source concentrations of benzene, chlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, naphthalene, 2-chlorophenol, 1,1-dichloroethane, PCE and TCE are normally distributed. The remaining source concentrations are not normally distributed. The source concentrations of 1,2,4-trichlorobenzene, 1,2 dichloroethene, chloroform, n-nitrosidi-n-propylamine, bis(2-chloroethyl) ether, and Aroclor 1260 (filtered) are distributed non-parametrically and the source concentrations of bis(2-ethylhexyl) phthalate and Aroclor 1260 (unfiltered) represent gamma distributions.

6.1.3 TREATMENT OF COPC "NON-DETECTS"

Every analytical technique used to measure the concentration of chemicals has an associated limit of detection (LOD) and limit of quantitation (LOQ). A chemical that is not detected in a sample is below the LOD. A chemical that is detected but in such low amounts that its concentration could not be accurately determined is below the LOQ. When a chemical is reported as not detected in a sample, the actual concentration is any value up to the LOD.

For the risk assessment, when a COPC is detected sporadically in a well, it will be assumed to exist in samples from that well in which it was not detected. The assignment of a value of one-half the detection limit to all samples reported as not detected reflects the assumption that the samples are equally likely to have any value up to the detection limit (U.S. EPA, 1988a, 1988b).

6.1.4 USE OF 95 PERCENT UPPER CONFIDENCE LIMIT CONCENTRATIONS

Due to the uncertainty associated with characterizing potentially heterogeneous media, the 95 percent UCL must be used to represent chemical concentrations (U.S. EPA, 1988a, 1988b). The U.S. EPA software has been used to estimate the 95 percent UCL concentration for each detected COPC. This software provides the 95 percent UCL for different data distribution types and recommends the most appropriate value to use for representing the data. The values recommended by the software have been selected for use in the risk assessment.

As discussed in **Section 6.1.2**, the 95 percent UCL for each detected organic COPC has been calculated using the analytical data from the wells where the maximum COPC concentrations have been detected. Ninety-five percent UCL concentrations have not been calculated for COPC that have not been detected in any wells.

The 95 percent UCL concentrations for wells on the MEW Property and the data used to derive them are presented in **Table 6-1**. The 95 percent UCL concentrations were used in the Johnson-Ettinger Model to predict RME and CTE exposure point concentrations for vapor in on-Site buildings. The source concentrations for the non-detected organic COPC were assumed to be one-half the maximum MDL of the given chemical.

6.2 FATE AND TRANSPORT ANALYSIS

The inhalation exposures on Site and the inhalation, ingestion, and dermal contact exposures off Site are characterized as indirect, meaning exposures occur away from or in a different medium than the source. The COPC concentrations at the POE are typically lower than the representative value determined for the source medium. Therefore, to quantify exposure through indirect pathways, the reduction in COPC concentrations associated with each transport mechanism from the source medium to the POE must be characterized. The groundwater and vapor transport modeling are discussed in **Sections 6.2.1** and **6.2.2**, respectively.

6.2.1 GROUNDWATER TRANSPORT ANALYSIS

Groundwater fate and transport modeling has been used to predict concentrations of organic COPC in the following media:

- Groundwater beneath the wetland; and
- Surface water in the creek

A full description of the groundwater modeling is provided in **Appendix C**.

The predicted concentrations of organic COPC in groundwater within the limestone beneath the wetland area have been used to represent the concentration of COPC in tap water from Hypothetical Wells A, B and C. The three wells are assumed to extract water from the limestone, which is the water bearing unit in which the maximum concentrations of COPC are expected to occur. The locations of these wells are shown on **Figure 6-1**.

The groundwater model has also been used to predict the maximum concentrations of organic COPC in the shallow groundwater of the loess/alluvial deposits of the wetland area. Volatile COPC in this shallow groundwater is a potential source of vapors into future off-Site buildings constructed in the wetland area. The maximum concentrations in the shallow groundwater of the wetland area predicted by the groundwater model have been used as the source concentration in the off-Site Johnson-Ettinger model. This is discussed further in **Section 6.2.2**.

The groundwater model has also been used to estimate concentrations of organic COPC in surface water within the creek. The model has been used to estimate the total mass flux of COPC to the creek and the total groundwater flux (base flow) to the creek. Concentrations of COPC in the creek have been estimated by dividing the COPC mass flux to the creek by the predicted groundwater base flow. This method is conservative for the following reasons:

- Surface water is directly exposed to atmospheric air and therefore the loss of COPC due to volatilization is likely to be significant; and
- Groundwater discharging to the creek will be diluted by surface water. Surface water flow consists of groundwater base flow and surface water run-off. Surface water run-off has not been included in the dilution calculation and therefore dilution has been underestimated.

The groundwater model has been used to assess the fate and transport of organic COPC in the dissolved phase and not for the transport of particulate matter suspended in groundwater.

Analysis of filtered and unfiltered samples of PCB Aroclor 1260 has shown that, where detected, the concentrations in unfiltered samples are significantly higher than those in filtered samples. Aroclor 1260 has been detected in unfiltered samples in groundwater collected from several wells (MW-3, MW-5, MW-11, MW-11A and MW-12). Aroclor 1260 has not been detected in filtered samples from any wells sampled since Komex began monitoring, with the exception of well MW-11, where between 2 and 4.5 μ g/L were detected in June and September 2000. The concentrations of this compound in filtered samples taken from this well have been below

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detection limit (0.5 μ g/L) for the last 14 rounds of sampling. Aroclor 1260 has not been detected in any other wells on or off the MEW Property.

The large difference in concentration of Aroclor 1260 between filtered and unfiltered samples suggests that this compound is strongly sorbed to suspended sediment. This is consistent with the high organic carbon partition coefficient for this compound (3.09 x 10⁵ L/kilograms [kg], U.S. EPA, 1996b). The source of Aroclor 1260 detected in the unfiltered samples is interpreted to be PCB-impacted sediment within the wells/fractures close to the wells. There is no evidence to suggest that COPC sorbed to particulate matter has been transported off-Site in groundwater. As a result, the migration of COPC sorbed to suspended matter in groundwater is not considered a viable pathway for COPC and has not been modeled.

Two types of groundwater fate and transport models have been developed: a fracture network model using Fracman, and an equivalent porous medium (EPM) model using Modflow-Surfact and MT3D. The methodology and results of this modeling are presented in detail in **Appendix** C and are summarized below.

6.2.1.1 Fracture Network Modeling

The fracture network modeling has been conducted to improve understanding of the migration of chemicals within the fractured limestone and to assess the validity of the EPM approach for predicting POE concentrations.

6.2.1.2 Methodology

The modeling involved a four stage process:

- Development of fracture networks. The model code FracWorks XP was used to develop a
 fracture network model that represents the limestone within the vicinity of the Site. After
 initial calibration, this model was used to generate 20 different sets of fracture networks, all
 of which conform to field statistics and observations that were made of the fracture spacing
 and orientations.
- 2. Estimating hydraulic conductivity of fracture networks. A simple flow model was developed using Fracman to estimate the bulk hydraulic conductivities of the upper weathered and intermediate zones in each fracture network. This information was necessary to help validate the EPM modeling approach.
- 3. **Groundwater flow simulation at the Site**. Groundwater flow within the vicinity of the Site was simulated for a selection of the fracture networks by using Fracman. Fracture networks were chosen to represent a broad range of possible flow regimes within the limestone.

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4. Chemical transport modeling. Chemical migration within the fractures of the limestone was simulated for the same selection of fracture networks using Fracman. Fracman uses a particle tracking approach to identify active fractures and estimate chemical mass flux within the system. The modeling accounted for the natural attenuation processes dispersion, dilution and biodegradation. Retardation within the fractures is assumed negligible and was not modeled. The results of this modeling effort were combined with the groundwater modeling flow results in order to estimate the worst-case, off-Site chemical concentrations and fluxes that might occur within the limestone.

6.2.1.3 Results

The following conclusions were drawn from the fracture network modeling work:

- **Migration pathways**. Migration pathways are dependent on fracture connectivity. The results of the fracture modeling show that chemicals are likely to take a tortuous, indirect, "zig-zag"-shaped pathways through fractures towards the wetland area; and
- Validation of EPM model. The fracture network modeling predicted a range of possible concentrations of COPC. The worst-case concentrations that were predicted by the fracture network model are similar to those predicted by the preliminary EPM model. This shows that although the EPM model cannot predict the exact shape of the plume, it can be used to predict reasonable maximum concentrations of chemicals for use in the risk assessment. This is discussed further in Section 6.2.2.2.

This phase of work has shown that the EPM approach is suitable for the purposes of this risk assessment.

6.2.2 EPM MODELING

The EPM model has been used for predicting RME concentrations of organic COPC in groundwater off Site and within surface water of the creek.

6.2.2.1 Methodology

The EPM model simulates groundwater flow in the limestone and overlying deposits in an area measuring 1.1 by 0.9 miles $(1.8 \times 1.4 \text{ km})$ that is centered on the MEW Property. Parameter values used in the model have been estimated from Site data, where available. Literature values and professional judgment have been used where no Site data exists. The intent of assumptions used in this modeling is to make the results relevant to the Site yet conservative, so

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that the risk associated with this exposure pathway will not be underestimated. This approach is consistent with U.S. EPA guidance (1989a).

The groundwater flow component of the model has been calibrated by modifying model parameter values within the expected range of variation until the predicted groundwater levels at the locations of existing wells are a reasonable approximation of observed levels.

The maximum concentrations detected on the MEW Property since the soil remediation was completed have been used as the source concentrations for the COPC, with the exception of undetected organics and TCE, as discussed below:

- Undetected organic COPC. Concentrations of undetected organics may vary from zero to the MDL. For this reason half the maximum MDL has been used as the source concentrations for these COPC. The maximum MDLs for these COPC are shown in Table 3-5.
- TCE. Use of the maximum measured source concentration of TCE of 13 μg/L results in a predicted concentration at well cluster MW-16 of 3.7 μg/L. This predicted concentration is lower than the measured concentrations in well MW-16B and MW-16C, where up to 9.9 μg/L TCE has been detected. Various methods were used to try and simulate the observed concentrations of TCE at this well location. Firstly, TCE was modeled using no biodegradation. The resultant plume was extensive and led to highly unrealistic concentrations in the other off-Site wells. Secondly, the on-Site source concentration of TCE was increased to 35 μg/L, such that the predicted concentrations at well cluster MW-16 were approximately equal to those observed. The second option led to a more satisfactory calibration with observed concentrations and therefore this higher source concentration has been used for TCE in the POE prediction runs. The need to increase source concentrations to accurately predict those observed at well cluster MW-16 may indicate that an undiscovered source of TCE exists.

Note that the maximum concentrations of filtered Aroclor 1260 have been used as the source concentration for this COPC. Unfiltered concentrations are not representative of dissolved phase concentrations and are therefore not suitable for use as source concentrations for the groundwater modeling.

Two source areas have been assigned; one in the south east corner of the Site and one in the center of the Site. Note that 1,2,4-trichlorobenzene has been modeled with two source zones (Source Areas 1 and 2). Chemical transport parameters have been selected from literature

values. Reasonable maximum values of biodegradation half-life for the detected organic COPC have been selected to take account of the uncertainty in this parameter value. For undetected organics, the model runs have been conducted with no biodegradation.

Sensitivity analysis was conducted as part of the fracture network modeling and the EPM modeling to test the effect of uncertainty in model input parameters on the prediction of COPC concentrations in groundwater off Site.

Although the EPM model can reasonably predict COPC concentrations in a simulated fracture and model results are valid for scales of evaluation that are likely to include one or more fractures, the exact occurrence, location and geometry of fractures in the field are not known. Therefore, model results can be used to assess worst-case risk to hypothetical receptors (by wells modeled as being installed in simulated fractures); however, the results can not be used at the scale necessary to precisely locate wells for either remediation or water supply purposes.

6.2.2.2 Results

The EPM model has been used to predict RME and CTE concentrations of organic COPC in groundwater at the following points:

- Groundwater extracted from the three hypothetical wells (A, B and C) completed within the limestone (**Figure 6-1**);
- The alluvial/loess deposits off Site; and
- Surface water in the creek.

The predicted RME and CTE concentrations are summarized in **Table 6-2**.

The COPC plumes predicted by the groundwater model are shown in **Appendix C** Caution must be adopted when interpreting these plumes. The objective of the EPM modeling is to predict RME and CTE POE concentrations and not to accurately predict the location of plumes or off-Site concentrations at specified locations. Accurate prediction of plume shape is not possible due to the heterogeneous nature of groundwater flow in fractured media. This has been confirmed by the fracture network modeling, which shows that there are a large number of possible flow paths between the MEW Property and the wetland area.

The locations of Hypothetical Wells A and B have been chosen such that they represent worst-case off-Site concentrations in the limestone. In reality, the maximum off-Site concentrations may not occur at these exact locations. They are likely to occur within fractures connected to the source zone and the exact locations of these fractures are not known. However, the

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modeling work has demonstrated that the maximum off-Site concentrations are highly unlikely to exceed the values predicted in Hypothetical Wells A and B and therefore the predicted concentrations at these well locations are considered suitable for use as POE concentrations for the risk assessment. To ensure that absolute worst-case conditions are assessed, the maximum concentrations from these two wells have been used to define concentrations for a fourth Hypothetical Well D. Well B concentrations were the highest and subsequently used as well D concentrations for 11 chemicals and Well A concentrations were used for the remaining 37 chemicals. The predicted concentrations in Hypothetical Well D are also presented in **Table 6-2**.

The location of Hypothetical Well C has been chosen such that it lies at the boundary of the predicted organic COPC plume.

The EPM model predicts higher concentrations of COPC in off-Site groundwater than those measured. The predicted concentrations of COPC in Hypothetical Well B are significantly higher than the observed concentrations in nearby monitoring wells MW-15A and MW-15B, completed within the limestone. As discussed in **Appendix C**, the fracture modeling has shown that the likelihood of a monitoring well intersecting an active COPC fracture migration pathway is relatively low. For this reason, it is possible that the observed concentrations of COPC in monitoring wells MW-15A and MW-15B are unrepresentative of maximum concentrations within their locality. To maintain a conservative approach, the modeled concentrations at this locality have been used as POE concentrations for the risk characterization rather than the lower observed concentrations.

6.2.3 AIR TRANSPORT ANALYSIS

An analysis of the transport of COPC from the Site through the air pathway has been conducted to assess potential receptor exposure concentrations in indoor air. This section describes the methodology used in the air transport analysis.

The air transport analysis follows guidelines developed by the U.S. EPA (2002d). The sources of air emissions and the COPC released have been identified from Site-specific information. Throughout the analysis, Site-specific data have been used where available. When such data were unavailable, conservative assumptions found in appropriate literature have been used. Regulatory default options and values have been used when applicable. The intent of assumptions used in this analysis is to make the results relevant to the Site yet conservative, so that the risk associated with this exposure pathway will not be underestimated. This approach is consistent with U.S. EPA guidance (1989a).

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6.2.3.1 Methodology

Vapor emissions pose a unique hazard to receptors within buildings constructed over contaminated soils and groundwater. A building traps the emissions indoors, and in many cases the resultant indoor air concentrations are significantly higher than those in the ambient air.

A review of vapor intrusion models was conducted to identify an appropriate model for estimating potential indoor air concentrations resulting from COPC that may volatilize from soil and enter future buildings. The models estimate the chemical concentration in soil gas, the subsequent movement of the vapor phase of the chemical upward to the atmosphere, and then the concentration of the chemical in indoor air. U.S. EPA recommends the Johnson-Ettinger Model for Subsurface Vapor Intrusion into Buildings. Copies of this model and an updated manual are provided and maintained by U.S. EPA on its Internet site (U.S. EPA, 2003c). The following summarizes several of the major points found in this reference.

The Johnson-Ettinger intrusion model incorporates several fundamental assumptions (1991):

- The model considers both diffusive flux and convection driven flow.
- The chemical is assumed to be present as a non-diminishing, steady state source even though, for most chemicals, biodegradation and other attenuation forces are expected to occur in subsurface media over time. This is therefore a conservative assumption.
- The system is assumed to be at equilibrium, and exposure to chemicals above equilibrium levels due to shutdown of the building ventilation system is assumed to be trivial in terms of exposure duration.
- It is assumed that flux occurs only through infiltration areas such as cracks in the building slab and that flux through the building slab itself is insignificant.
- All vapors originating directly below the foundation are assumed to enter the building. This too, is a conservative assumption.

The vapor intrusion model was proposed as a method of calculating chemical concentrations in indoor air based on specified chemical concentrations in soil gas (Johnson and Ettinger, 1991). Physical parameters such as moisture content, dry-soil density, porosity, and effective air permeability affect the rate at which the vapors from a volatile chemical migrate through the soils. The dominant mechanism of vapor migration is closely correlated with the depth to source and soil permeability (Johnson and Ettinger, 1991).

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For the indoor air analysis, Site-specific values for these parameters have been used where available. Conservative default values have been identified based on known Site characteristics for parameters that were not measured directly. Although buildings have not yet been constructed, regulatory guidance and literature sources have been consulted to identify appropriate values for building parameters (*e g* building dimensions and foundation characteristics).

The Johnson-Ettinger model has been used for predicting indoor air concentrations of volatile COPC in a future commercial building located on Site and a future residential building located on the wetland area off-Site. The parameter values used in the Johnson-Ettinger model for these two scenarios are given in **Tables D** and **E** below.

Table D: Parameter Values Used in Vapor Model – Commercial Building on MEW Property

Parameter	Value	Justification
Initial groundwater concentration	See Table G	95 percent UCL groundwater source concentrations
Average groundwater temperature	60°F (15.56°C)	Average temperature of shallow groundwater in Cape Girardeau region (Johnson and Ettinger, 1991)
Depth below grade to bottom of enclosed space floor	6 6 feet (200 cm)	Future buildings on MEW Property assumed to have a basement
Depth below grade to water table	40 feet (1212 cm)	Average depth to water table at MEW property
Thickness of soil stratum A	35 feet (1067 cm)	Average thickness of loess deposits at the MEW Property is 35 feet
Thickness of soil stratum B	5 feet (145 cm)	Average thickness of weathered limestone above water table
Soil stratum A soil type	Silty clay	Loess is described as a silty clay
Soil stratum A bulk density	97 lb/ft³ (1 554 g/cm³)	Bulk density of loess derived from Site data
Soil stratum A total porosity	0.385	Default value for a silty clay given in Johnson and Ettinger
Soil stratum A water filled porosity	0 197	Default value for a silty clay given in Johnson and Ettinger
Soil stratum B soil type	Silty clay	Weathered Upper zone of limestone is
Soil stratum B bulk density	97 lb/ft³ (1 554 g/cm³)	characterized by fractures infilled with loess Properties of loess (see Stratum A)
Soil stratum B total porosity	0 385	considered most appropriate for this
Soil stratum B water filled porosity	0 197	zone
Enclosed space floor thickness	3.9 inches (10 cm)	Default value in Johnson and Ettinger
Soil/building pressure differential	40 g/cm-s ²	Default value in Johnson and Ettinger
Enclosed space floor length	32 8 feet (1000 cm)	Default value in Johnson and Ettinger

Parameter	Value	Justification
Initial groundwater concentration	See Table G	95 percent UCL groundwater source concentrations
Enclosed space floor width	32.8 feet (1000 cm)	Default value in Johnson and Ettinger
Enclosed space height	12 feet ((366 cm)	Default value in Johnson and Ettinger
Floor-wall crack width	0 04 inches (0.1 cm)	Default value in Johnson and Ettinger
Indoor air exchange rate (unitless)	0.25	Default value in Johnson and Ettinger
Average vapor flow rate into building	1 5 L/ft (5 L/m)	Default value in Johnson and Ettinger

Table E: Parameter Values Used in Vapor Model – Residential Building on Wetland

Parameter	Value	Justification
Initial groundwater concentration	See Table G	95 percent UCL groundwater source
		concentrations
		Average temperature of shallow
Average groundwater temperature	60°F (15.56°C)	groundwater in Cape Girardeau
		region (Johnson and Ettinger, 1991)
Donth holow grade to bottom of	0.5 foot /15	Future buildings on wetland area are
Depth below grade to bottom of	0.5 feet (15	unlikely to have basement due to
enclosed space floor	cm)	proximity of water table to surface
Danth halou grade to water table	4 feet	Minimum depth to water table
Depth below grade to water table	(122:cm)	recorded on wetland
This language of any street up. A	4 feet	One soil type assumed above water
Thickness of soil stratum A	(122 cm)	table
Calabata A aaddaaa	City of an	Upper 4 feet of deposits in wetland
Soil stratum A soil type	Silty clay	area are described as a silty clay
Call alord and the Harden Alord	101.7 lb/ft ³	Default value for a silty clay given in
Soil stratum A bulk density	(1.63 g/cm ³)	Johnson and Ettinger
Calaba a Adada a anta	0.385	Default value for a silty clay given in
Soil stratum A total porosity		Johnson and Ettinger
Call short as A combar fills of a second.	0.107	Default value for a silty clay given in
Soil stratum A water filled porosity	0 197	Johnson and Ettinger
England and a floor thickness	3 9 inches	Default value in Johnson and Ettinger
Enclosed space floor thickness	(10 cm)	Default value in Johnson and Ettinger
Soil/building pressure differential	40 g/cm-s ²	Default value in Johnson and Ettinger
Englaced engage floor langth	32.8 feet	Default value in Johnson and Ethinger
Enclosed space floor length	(1000 cm)	Default value in Johnson and Ettinger
England and a floor width	32.8 feet	Default value in Johnson and Ettinger
Enclosed space floor width	(1000 cm)	Default value in Johnson and Ettinger
Enclosed space hought	12 feet	Default value in Johnson and Ettinger
Enclosed space height	(366 cm)	Default value in Johnson and Ettinger
Floor-wall crack width	0 04 inches	Default value in Johnson and Ettinger
Hoor-wall crack wialfi	(0.1 cm)	Default value in Johnson and Ettinger
Indoor air exchange rate (unitless)	0.25	Default value in Johnson and Ettinger
	0.23	Delati value in Johnson and Eninger
Average vapor floor rate into building	1.5 L/ft	Default value in Johnson and Ettinger
Average vapor hoor rate into boliding	(5 L/m)	Deldon value in Johnson and Eminger

U.S. EPA guidance (2002d) recommends that the vapor intrusion pathway be only considered for chemicals with a Henry's Law Constant of greater than 1 x 10^{-5} partial pressure molar concentration (atm.m³/mol). For COPC with a Henry's Law Constant of less than this value, vapor migration is not considered a viable pathway and as a result these COPC have not been included in the vapor modeling.

The 95 percent UCL groundwater concentrations described in **Section 6.1.4** have been used as the source concentrations for predicting RME indoor air concentrations for detected organic

COPC on the MEW Property. Note that the concentrations for filtered samples have been use to estimate RME source concentrations for PCB Aroclor 1260. This is because volatilization will occur from the dissolved phase and not directly from soil sorbed PCBs. Concentrations of non-detectable organic COPC may vary from zero to the MDL. For this reason half the maximum MDL has been used as the source concentrations for these COPC. The maximum MDLs for these COPC are shown in **Table 3-5**.

The groundwater modeling has been used to predict RME concentrations of COPC that could arise in groundwater within the surficial deposits beneath the wetland area (Section 6.2.2). These concentrations have been used for predicting indoor air concentrations in future buildings located on the wetland area.

The groundwater COPC source concentrations for use in the Johnson-Ettinger model are presented in **Table 6-3**.

Default parameter values for building dimensions, floor thickness, crack width, pressure differential and vapor flow rate have been used in the vapor modeling. The U.S. EPA recommends the use of these values (U.S. EPA, 2003c).

Any future buildings constructed on the MEW Property may have basements and therefore the allowance for a basement has been made for modeling on-Site exposure. This assumption is conservative. The construction of basements in the wetland area is considered unlikely due to the shallow depth to the water table in this area.

Chemical-specific properties for the COPC are included in the most recent Johnson-Ettinger model (U.S. EPA, 2003c) with the exception of the Aroclors, benzo(a)pyrene and bis(2-chloroisopropyl) ether. Where available, values from the previous version of the Johnson-Ettinger model have been used (U.S. EPA, 1997b). No values could be found for five COPC; Aroclor 1221, Aroclor 1232, Aroclor 1248, Benzo(a)pyrene, and bis(2-chloroisopropyl) ether. The vapor risk from these COPC has not been modeled. The chemical specific parameter values used in the vapor modeling are consistent with those used in the groundwater modeling.

6.2.3.2 Results

The Johnson-Ettinger model has been used to predict the indoor air concentrations in a building with an infinite source. The model input and results sheets are presented in **Appendix E**. The predicted RME and CTE indoor air concentrations are tabulated in **Table 6-4**. The same POE concentrations were used for both RME and CTE.

The results of the fate and transport modeling have been used to estimate the mo

SUMMARY OF POINT OF EXPOSURE CONCENTRATIONS

The results of the fate and transport modeling have been used to estimate the majority of COPC POE concentrations. Vapor modeling has been used to estimate indoor air POE concentrations in future buildings. Groundwater modeling has been used to estimate POE concentrations in tap water from future off-Site wells and surface water in the creek.

A summary of the POE concentrations and their derivation is given in Table 6-5.

6.3

Risk characterization is the final step in the risk quantification process, combining the information developed in the toxicity assessment (Section 4) and the exposure point concentrations (Section 6). Risk characterization is the estimate of potential carcinogenic and non-carcinogenic effects of COPC over a lifetime of exposure. The risk from potential carcinogenic effects resulting from exposure to Site-related COPC is presented as the ILCR. The risk of potential non-carcinogenic toxic effects is presented as the HI.

Section 7.1 presents the quantitative exposure assessment. **Section 7.2** describes the characterization of potential carcinogenic and non-carcinogenic risks.

7.1 EXPOSURE QUANTIFICATION

The exposure assessment process quantifies the magnitude, frequency, and duration of exposure for those populations and pathways selected for quantitative evaluation in the CEM (**Section 4**). Exposure pathways identified as being complete in the CEM were:

- Inhalation of indoor air impacted by the intrusion of vapors through the floor;
- Inhalation of indoor air impacted by the volatilization of vapors from tap water;
- Ingestion of tap water;
- Dermal contact with tap water;
- Incidental ingestion of surface water in the creek;
- Dermal contact with surface water in the creek;
- Incidental ingestion of shallow groundwater in the wetland area; and
- Dermal contact with shallow groundwater in the wetland area.

The following sections present the standard equations for estimating human intake with the selected exposure pathways and the exposure factors required to conduct the analysis.

7.1.1 AIR EXPOSURE - INHALATION

Equation 6-16 from RAGS (U.S. EPA, 1989a) has been used to quantify intake from the inhalation pathway:

 $I_a=(C_a)(IR)(ET)(EF)(ED)/(BW)(AT)$ (7-1)

where

 I_a = intake from inhalation of a COPC in air (mg/kg-d)

 C_a = concentration of COPC in air (mg/m³)

IR = inhalation rate (m^3/h)

ET = exposure time (h/d)

EF = exposure frequency (d/y)

ED = exposure duration (y)

BW = body weight (kg)

AT = averaging time (d), ED x $\frac{365d}{y}$ (non-carcinogens), $\frac{70y}{x}$ $\frac{365d}{y}$ (carcinogens)

The estimation of the COPC concentration in indoor air arising from vapor intrusion through the floor has been discussed in **Section 6.2.3**. The COPC concentration in indoor air arising from volatilization from tap water (C_{tw}) is calculated from the volatilization factor using Equation 7-2:

$$C_{\text{intw}} = C_{\text{tw}} * VF_{\text{tw}}$$
 (7-2)

 C_{intw} = concentration of COPC in indoor air (mg/m³)

 C_{tw} = concentration of COPC in tap water ($\mu g/L$)

VF_{tw} = receptor-specific volatilization attenuation factor (dimensionless) (0.0005, U.S.

EPA, 1991)

For volatile chemicals, an upperbound volatilization constant (VF_{tw}) of 0.0005 is used that is based on all uses of household water (*e g* showering, laundering, and dish washing). Certain assumptions are made including the volume of water used in a residence for a family of four is 720 L/day, the volume of the dwelling is 150,000 L, and the air exchange rate is 0.25 air changes/hour (Andelman in RAGS Part B as cited in U.S. EPA, 2003b). The average transfer efficiency weighted by water use is 50 percent (*i e* half of the concentration of each chemical in water will be transferred into air by all water uses). According to the U.S. EPA (2003b), the range of transfer efficiencies extends from 30% for toilets to 90% for dishwashers.

Note that the volatilization from tap water is not considered a plausible pathway for organic COPC with a Henry's Law constant of less than 10⁻⁵ atm.m³/mol. Exposure for these COPC via this pathway is therefore assumed to be zero.

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To maintain a conservative approach, it is assumed that the tap water comes from a domestic supply groundwater well with no treatment. The concentration of COPC in tap water is therefore assumed equal to the concentration in the extracted groundwater.

7.1.2 WATER - INGESTION

Equation 6-11 from RAGS (U.S. EPA, 1989a) has been used to quantify intake from the ingestion of water:

$$I_w = (C_w)(IR)(EF)(ED)/(BW)(AT)$$
 (7-3)

where

I_w = intake from ingestion of a COPC in water (mg/kg-d)

 $C_w = \text{concentration of COPC in water } (mg/m^3)$

IR = ingestion rate (1/d)

EF = exposure frequency (d/y)

ED = exposure duration (y)

BW = body weight (kg)

AT = averaging time (d), ED x $\frac{365d}{y}$ (non-carcinogens), $\frac{70y}{x}$ $\frac{365d}{y}$ (carcinogens)

The groundwater model has been used to predict RME and CTE concentrations in groundwater at three hypothetical well locations off-Site and in groundwater discharging to the creek. These results have been used to estimate the potential exposure from ingestion of tap water and from incidental ingestion of the creek surface water.

7.1.3 WATER - DERMAL CONTACT

The absorbed dose from dermal contact with water has been calculated using the methodology presented in the RAGS Part E document (U.S. EPA, 2004b):

$$DAD = (DA_{event})(EV)(ED)(EF)(SA)/(BW)(AT)...$$
 (7-4)

where

DAD = absorbed dose through dermal contact with COPC in water (mg/kg-d)

 $DA_{event} =$ absorbed dose per event (mg/cm²-event) (from equation 6-4)

EV = event frequency (events/day)

ED = exposure duration (y)

EF = exposure frequency (d/y)

BW = body weight (kg)

AT = averaging time (d), ED x $\frac{365d}{y}$ (non-carcinogens), $\frac{70y}{x}$ $\frac{365d}{y}$ (carcinogens)

The absorbed dose per event for organic compounds is given by either equation 7-5 or 7-6:

$$DA_{event} = 2.FA.K_{p}.C_{w}.\sqrt{\frac{6.\tau_{event}.I_{event}}{\pi}}$$
 [f tevent \leq t*, (7-5)

$$DA_{event} = FA.K_{p}.C_{w} \left[\frac{t_{event}}{1+B} + 2.\tau_{event} \left(\frac{1+3.B+3.B^{2}}{(1+B)^{2}} \right) \right]$$
If tevent > t*, (7-6)

COPC-specific parameter values required for equations 7-5, 7-6 and 7-7 have been obtained, from the RAGS Part E document (U.S. EPA, 2004b) or calculated using the USEPA spreadsheet. These are presented in **Table 7-1**. Equation 7-7 has therefore been used to model dermal uptake for these compounds.

The groundwater model has been used to predict RME concentrations in groundwater at three hypothetical well locations off-Site, shallow groundwater within the wetland area and in surface water within the creek (**Table 6-2**). These results have been used to estimate the potential exposure from dermal contact with tap water, groundwater in excavations and with the creek surface water.

7.1.4 EXPOSURE FACTORS

Exposure factors have been derived for four receptor types; an on-Site adult worker, an off-Site adult construction workers, an off-Site adult resident, and an off-Site child resident. Exposure factors are discussed in the following sections.

7.1.4.1 On-Site Adult Worker

The adult worker receptor has been assumed for exposure scenarios on the MEW Property. The CEM model identified the inhalation of indoor air from vapor intrusion through the floor as the only complete pathway for this receptor. Exposure factors for RME related to the inhalation of indoor air appropriate for an adult worker are presented in **Table F**. The values presented in this table are considered suitable for calculating RME to this receptor type. Exposure factors for CTE related to the inhalation of indoor air appropriate for an adult worker are presented in **Table G**.

Table F: Reasonable Maximum Exposure Parameters for On-Site Adult Worker

Pathway	Parameter	Adult Worker	Reference
s	IR – Inhalation Rate (m³/h)	2	Based on 20 m³ in one 10 hour work day (U.S. EPA, 1991a)
Gase	EF – Exposure Frequency (d/y)	250	U S. EPA, 1991a
lized	ED – Exposure Duration (y)	25	U S. EPA, 1991a
/olafi	ET – Exposure Time, Outdoors (h/d)	o	Commercial worker assumed to spend
entire 10		entire 10 hour working day indoors in place of work	
nhala	BW – Body Weight (kg)	70	U.S. EPA, 1991a
=	AT – Averaging Time, Carcinogen (d)	25,550	U.S EPA, 1991a
	AT – Averaging Time, Non-carcinogen (d)	9,125	U S. EPA, 1991a

Table G: Central Tendency Exposure Parameters for On-Site Adult Worker

Pathway	Parameter	Adult Worker	Reference
	IR – Inhalation Rate (m³/h)	16	Assumes moderate activity (U.S. EPA, 1997a)
dses	EF – Exposure Frequency (d/y)	219	U.S. EPA, 1993
o paz	ED – Exposure Duration (y)	66	U.S EPA, 1993
olatili	ET – Exposure Time, Outdoors (h/d)	0	Commercial worker assumed to spend
Inhalation of Volatilized Gases	ET – Exposure Time, Indoors (h/d)	10	entire 10 hour working day indoors in place of work
nhalat.	BW – Body Weight (kg)	70	U.S. EPA, 1991a
=	AT – Averaging Time, Carcinogen (d)	25,550	U.S. EPA, 1991a
	AT – Averaging Time, Non-carcinogen (d)	2,409	365 d/yr x exposure duration of 5 yr

7.1.4.2 Off-Site Adult Construction Worker

The adult construction worker is considered a potential off-Site receptor. The CEM model identified the incidental ingestion and dermal contact with shallow groundwater in the wetland area to be the only complete pathways for this receptor. Exposure factors related to this receptor for RME are presented in **Table H**. The values presented in this table are considered suitable for calculating RME to this receptor type. Exposure factors related to this receptor for CTE are presented in **Table I**.

Table H: Reasonable maximum exposure parameters for off-Site construction worker

Pathway	Parameter	Construction Worker	Reference
on of	IR – Ingestion Rate (I/d)	0.12	U S EPA, 2000 assuming 12 hour working day
estic	EF – Exposure Frequency (d/y)	250	-
ental Ingesti groundwater	ED – Exposure Duration (y)	1	RAIS, 2004
	BW – Body Weight (kg)	70	U.S. EPA, 1991a
Incidental Ingestion of groundwater	AT – Averaging Time, Carcinogen (d)	25,550	70 years (U.S. EPA, 1991a)
<u> </u>	AT – Averaging Time, Non-carcinogen (d)	365	1 year duration (RAIS, 2004)
<u></u>	EV = Event Frequency (events/d)	1	U.S. EPA, 2004b
) ate	ED – Exposure Duration (y)	1	RAIS, 2004
	EF – Exposure Frequency (d/y)	250	
20	SA = Surface Area (cm²)	3,300	U.S. EPA, 2004b
้อั	BW – Body Weight (kg)	70	U.S EPA, 1991a
ct vith	AT – Averaging Time, Carcinogen (d)	25,550	70 years (U.S EPA, 1991a)
Conta	AT – Averaging Time, Non-carcinogen (d)	365	1 year duration (RAIS, 2004)
Dermal Contact with Groundwater	t _{event-RME} = Event Duration (h)	12	Assumed number of hours worked/d for construction worker

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Table I: Central Tendency Exposure Parameters For Off-Site Construction Worker

Pathway	Parameter	Construction Worker	Reference
lion of er	IR – Ingestion Rate (I/d)	0 04	U.S EPA, 2000 assuming 4 hours working in water working day
ental Ingesti groundwatei	EF – Exposure Frequency (d/y)	219	-
<u> </u>	ED – Exposure Duration (y)	1	RAIS, 2004
atal our	BW – Body Weight (kg)	70	U.S. EPA, 1991a
Incidental Ingestion of groundwater	AT – Averaging Time, Carcinogen (d)	25,550	70 years (U.S. EPA, 1991a)
	AT – Averaging Time, Non-carcinogen (d)	365	1 year duration (RAIS, 2004)
	EV = Event Frequency (events/d)	1	U.S. EPA, 2004b
<u>.</u>	ED – Exposure Duration (y)	1	RAIS, 2004
ate	EF – Exposure Frequency (d/y)	219	-
φ	SA = Surface Area (cm²)	3,300	U S EPA, 2004b
one	BW – Body Weight (kg)	70	U.S EPA, 1991a
ith G	AT – Averaging Time, Carcinogen (d)	25,550	70 years (U.S. EPA, 1991a)
itact w	AT – Averaging Time, Non-carcinogen (d)	365	1 year duration (RAIS, 2004)
Dermal Contact with Groundwater	tevent-RME = Event Duration (h)	4	Assumed CTE number of hours worked/d for
Õ			construction worker

7.1.4.3 Off-Site Resident

The child and adult resident receptors have been assumed for off-Site exposure scenarios. The CEM model identified the inhalation of indoor air, ingestion and dermal contact with tap water and the incidental ingestion and inhalation of surface water in the creek as the complete exposure pathways for these receptors. Exposure factors appropriate for these receptor types and pathways have been obtained from the RAGS guidance, where available. Justification for exposure factors not provided in these sources is given below. The exposure factors used to quantify RME to residential receptors are presented in **Table J**. The values presented in this table are considered suitable for calculating RME to this receptor type. The exposure factors used to quantify CTE to residential receptors are presented in **Table K**.

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Exposure to tap water and indoor air is assumed to occur 350 days per year for a resident. Exposure to the creek is considered to occur on a less frequent basis and therefore an exposure frequency of 1 day per week (52 days per year) has been assumed.

Total body surface areas have been assumed for the reasonable maximum dermal contact exposures. This accounts for contact with tap water during showering and bathing. Swimming is considered unlikely in the creek due to the shallow depth of water; however, the conservative assumption is made that complete immersion of the body could occur and therefore total body area has been assumed for reasonable maximum exposure to creek water. Contact with creek water for the hands, lower arms, feet, and lower legs has been assumed for CTE. The duration of dermal contact is assumed to be one hour for showering and bathing activities in tap water. The assumption of two hours duration per event for dermal contact with the creek is considered conservative.

Table J: Reasonable Maximum Exposure Parameters for Residential Receptor

Pathway	Parameter	Adult Resident	Child Resident	Reference
	IR – Inhalation Rate (m³/h)	0 83	0 42	U.S EPA, 1991a
S	EF – Exposure Frequency (d/y)	350	350	U.S. EPA, 1988c
Inhalation of Volatilized Gases	ED – Exposure Duration (y)	24	6	Total of 30 year exposure (U.S EPA, 1991a)
## E	ET – Exposure Time, Outdoors (h/d)	0	0	Conservatively assumed
of Volc	ET – Exposure Time, Indoors (h/d)	24	24	to spend 24 hours/day Indoors
<u> </u>	BW – Body Weight (kg)	70	15	U.S. EPA, 1988c
halati	AT – Averaging Time, Carcinogen (d)	25,550	25,550	U.S. EPA, 1988C
=	AT – Averaging Time, Non- carcinogen (d)	8,760	2,190	U.S EPA, 1988c
	IR – Ingestion Rate (I/d)	2	1	U.S EPA, 2000
<u> </u>	EF – Exposure Frequency (d/y)	350	350	U.S EPA, 1988c
Ingestion of tap water	ED – Exposure Duration (y)	24	6	Total of 30 year exposure (U.S EPA, 1991a)
ō C	BW – Body Weight (kg)	70	15	U.S. EPA, 1988c
igestio	AT – Averaging Time, Carcinogen (d)	25,550	25,550	US EPA, 1988C
<u> </u>	AT – Averaging Time, Non- carcinogen (d)	8,760	2,190	U.S. EPA, 1988C
	EV = Event Frequency (events/d)	1	1	U.S. EPA, 2004b
o water	ED – Exposure Duration (y)	24	6	Total of 30 year exposure (U.S. EPA, 1991a)
<u> </u>	EF – Exposure Frequency (d/y)	350	350	U.S. EPA, 2004b
¥	SA = Surface Area (cm²)	18,000	6,600	U.S. EPA, 2004b
ī	BW – Body Weight (kg)	70	15	U.S. EPA, 1988c
l contc	AT – Averaging Time, Carcinogen (d)	25,550	25,550	U.S. EPA, 1988c
Dermal contact with tap	AT – Averaging Time, Non- carcinogen (d)	8,760	2,190	US EPA, 1988c
	t _{event-RME} = Event Duration (h)	0.58	1	U.S. EPA, 2004b

Table J: Reasonable Maximum Exposure Parameters For Residential Receptor (continued)

Pathway	Parameter	Adult	Child	Reference
		Resident	Resident	
	IR – Ingestion Rate (I/d)	0 05	0 05	U S. EPA, 2000
ater Ter				(assuming 1 hour
>				exposure swimming)
ěk	EF – Exposure Frequency (d/y)	52	52	Assumes 1 day per
S.				year
ō	ED – Exposure Duration (y)	24	6	Total of 30 year
ë			İ	exposure (US EPA,
Jesi				1991a)
Incidental Ingestion of creek water	BW – Body Weight (kg)	70	15	U.S. EPA, 1988c
<u>ta</u>	AT – Averaging Time, Carcinogen	25,550	25,550	US EPA, 1988c
der	(d)	1		
nČi	AT – Averaging Time, Non-	8,760	2,190	U.S. EPA, 1988c
_	carcinogen (d)			
·	EV = Event Frequency (events/d)	1	1	U.S. EPA, 2004b
	ED – Exposure Duration (y)	24	6	Total of 30 year
			1	exposure (US EPA,
ē				1991a)
۸at	EF – Exposure Frequency (d/y)	52	52	Assumes 1 day per
é		1	· · · · · · · · · · · · · · · · · · ·	year
ďα	SA = Surface Area (cm²)	18,000	6,600	U S. EPA, 2004b
Sul				(showering
Ę				parameters assumed)
>	BW – Body Weight (kg)	70	15	U.S. EPA, 1988c
ţ	AT – Averaging Time, Carcinogen	25,550	25,550	U.S. EPA, 1988c
jo	(d)			
ğ	AT – Averaging Time, Non-	8,760	2,190	US EPA, 1988c
Dermal Contact with Surface Water	carcinogen (d)			
۵	t _{event-RME} = Event Duration (h)	2	2	Assumed that water
				remains in contact
				with skin for 1 hour
		1		after immersion

Table K: Central Tendency Exposure Parameters For Residential Receptor

Pathway	Parameter	Adult Resident	Child Resident	Reference
	IR – Inhalation Rate (m³/h)	0.63	0.36	US EPA, 1997a
Ď	EF – Exposure Frequency (d/y)	350	350	U.S. EPA, 1988c
illize	ED – Exposure Duration (y)	9	2	SRS, 2000
<u>S</u>	ET – Exposure Time, Outdoors (h/d)	1.5	5	U S. EPA, 1997a
n of Va Gases	ET – Exposure Time, Indoors (h/d)	21	19	1
o e G	BW – Body Weight (kg)	70	15	U.S EPA, 1988c
Inhalation of Volatilized Gases	AT – Averaging Time, Carcinogen (d)	25,550	25,550	U.S. EPA, 1988C
Ξ	AT – Averaging Time, Non- carcinogen (d)	3,285	730	US EPA, 1988c
<u></u>	IR – Ingestion Rate (I/d)	1 4	0.315	U.S. EPA, 1997a
ă Ā	EF – Exposure Frequency (d/y)	350	350	US EPA, 1988c
<u>δ</u>	ED – Exposure Duration (y)	9	2	SRS, 2000
f a	BW – Body Weight (kg)	70	15	U.S. EPA, 1988c
Ingestion of tap water	AT – Averaging Time, Carcinogen (d)	25,550	25,550	U.S EPA, 1988c
Inge	AT – Averaging Time, Non- carcinogen (d)	3,285	730	U.S. EPA, 1988c
	EV = Event Frequency (events/d)	1	1	U.S EPA, 2004b
ate	ED – Exposure Duration (y)	9	2	SRS, 2000
≯ Ω	EF - Exposure Frequency (d/y)	350	350	U S. EPA, 2004b
<u>t</u>	SA = Surface Area (cm²)	18,000	6,600	U.S EPA, 2004b
¥	BW – Body Weight (kg)	70	15	U.S EPA, 1988c
ntact '	AT – Averaging Time, Carcinogen (d)	25,550	25,550	U.S. EPA, 1988c
Dermal contact with tap water	AT – Averaging Time, Non- carcinogen (d)	3,285	730	U.S EPA, 1988c
De	t _{event-RME} = Event Duration (h)	0.25	0.33	U.S. EPA, 2004b

Table K: Central Tendency Exposure Parameters For Residential Receptor (continued)

Pathway	Parameter	Adult	Child	Reference
		Resident	Resident	
	IR – Ingestion Rate (I/d)	0.01	0.05	U S EPA, 2000
ěk				(assuming 1 hour
Cr				exposure wading)
٥	EF – Exposure Frequency (d/y)	52	52	Assumes 1 day per
Incidental Ingestion of creek water				year
ngesti water	ED – Exposure Duration (y)	9	2	SRS, 2000
<u>ĕ</u> ≯	BW – Body Weight (kg)	70	15	U.S EPA, 1988c
<u>ta</u>	AT - Averaging Time, Carcinogen	25,550	25,550	U.S. EPA, 1988c
der	(d)			
nci	AT – Averaging Time, Non-	3,285	730	U S EPA, 1988c
-	carcinogen (d)			
<u>-</u>	EV = Event Frequency (events/d)	1	1	U.S. EPA, 2004b
	ED – Exposure Duration (y)	9	2	SRS, 2000
	EF – Exposure Frequency (d/y)	52	52	Assumes 1 day per
_				year
Dermal Contact with Surface Water	SA = Surface Area (cm²)	6,170	2,300	Assumes exposure via
Š				wading. Hands, lower
ပ္ထို				arms, feet and lower
Ť			1	legs become wet 50th
₹ S				percentile values
₹				used. U.S. EPA, 2004b
act	BW - Body Weight (kg)	70	15	U.S. EPA, 1988c
ont	AT – Averaging Time, Carcinogen	25,550	25,550	U.S. EPA, 1988C
<u>o</u>	(d)			
Ē	AT – Averaging Time, Non-	3,285	730	US EPA, 1988c
Der	carcinogen (d)			
-	t _{event-RME} = Event Duration (h)	2	2	Assumed that water
				remains in contact
				with skin for 1 hour
				after immersion

7.2 RISK CHARACTERIZATION

In this risk assessment, potential health effects to humans following exposure to Site-related COPC have been estimated using methods established by U.S. EPA. Key documents used as guidance for preparing the risk assessment are presented in **Section 11** and are referenced throughout the following paragraphs.

7.2.1 HEALTH EFFECTS CONCEPTS FOR QUANTITATIVE RISK ASSESSMENT

In risk assessments, two different values are calculated to evaluate potential health impacts: the ILCR and the non-carcinogenic HI. The ILCR is an upper-bound estimate of the incremental cancer risk for individuals who may have been exposed to Site-related COPC. The ILCR is compared to a threshold probability to determine whether the projected risk poses an unacceptable health threat. The U.S. EPA uses the general 10⁻⁴ to 10⁻⁶ risk range as a target range within which the Agency strives to manage risks as part of a Superfund clean-up (U.S. EPA, 1991c). Therefore, for the purposes of this risk assessment, a risk is considered to be acceptable when the cumulative carcinogenic Site risk to an individual based on RME for both current and future land use is less than 1 x 10⁻⁴ and the non-carcinogenic hazard quotient is less than 1 (U.S. EPA, 1990b, 1991b, 1991c). The exact point of departure is established on a Site-specific basis and is highly dependent upon land-use conditions.

The potential health effects resulting from exposure to non-carcinogenic COPC are evaluated by comparing a receptor's exposure or intake level to the RfD of that COPC. The ratio of intake over the RfD is the hazard quotient (HQ) (U.S. EPA, 1989a). An RfD is the daily exposure level likely to cause no appreciable risk of deleterious effects during a lifetime. If the HQ is greater than 1 or "above unity," there may be concern for potential non-carcinogenic health effects. The level of concern increases as the HQ increases above unity, although the two are not linearly related (U.S. EPA, 1989a). When receptors are exposed to more than one COPC through multiple pathways, it is useful to develop a total hazard index (HI). The HI is the summation of HQs across pathways (U.S. EPA, 1986). The HI is also compared with a threshold level of unity.

7.2.2 METHODS FOR CHARACTERIZING HEALTH EFFECTS

Risks from exposure to hazardous COPC are calculated for carcinogenic and/or non-carcinogenic effects as appropriate. Fifteen compounds are considered non-carcinogens (**Table C**, **Section 4.4**) and therefore the risks for these compounds have been considered for non-

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carcinogenic effects only. The remaining 37 COPC are considered to be carcinogens. Risks to these compounds have been calculated for their carcinogenic and non-carcinogenic effects.

7.2.2.1 Carcinogenic Effects

The risk attributed to exposure to carcinogenic compounds is estimated as the increased probability of an individual developing cancer over a lifetime as a result of the exposure. At low doses, the risk of developing cancer (ILCR) is determined as follows (U.S. EPA, 1989a):

An exposed receptor's risk is presented as the ILCR and is calculated by multiplying the chronic daily intake (CDI) values for carcinogenic effects by the CSFs of the carcinogenic COPC. As discussed in **Section 4.4**, the risks to receptors have been calculated using a range of slope factors for TCE.

If a receptor is exposed via a single pathway to several carcinogens, the following equation is used to sum cancer risks:

$$Risk_t = Risk (COPC_1) + Risk (COPC_2) + \dots Risk (COPC_n)$$
 (7-8)

where

Risk_t = total risk of cancer incidence for a given pathway

Risk(COPC_n) = individual carcinogenic COPC risk

Similarly, if a receptor is exposed through multiple pathways, the total ILCR can be calculated by summing the pathway-specific risks (U.S. EPA, 1986).

The ILCR has been calculated for the child and adult residential receptors separately. The risks to these receptors have been summed for residential receptors to give the total ILCR for a 30-year exposure duration including 6 years as a child and 24 years as an adult.

7.2.2.2 Non-Carcinogenic Effects

As mentioned, the HQ is used to characterize the potential health effects resulting from exposure to non-carcinogenic COPC. The HQ compares a receptor's exposure or intake level to the RfD of that COPC (U.S. EPA, 1989a) and is defined as:

$$HQ_{i} = CDI_{i}/RfD_{i}....(7-9)$$

where

 HQ_1 = hazard quotient for $COPC_1$ (unitless)

CDI₁ = chronic daily intake of COPC₁ (mg/kg-d)

 $RfD_i = reference dose of COPCi (mg/kg-d)$

When using the above equation to estimate non-carcinogenic risk, both the intake and the RfD must refer to exposures of equivalent duration (*e g* chronic, subchronic, or fewer than two weeks). In the risk assessment, exposures associated with construction activities are evaluated using subchronic RfD values, while long-term commercial/industrial activities are assessed using chronic RfD values. HIs are determined by assuming dose additivity for those COPC acting by the same mechanism and inducing the same effects (U.S. EPA, 1986, 1989a). In the case of simultaneous exposure of a receptor to several COPC, an HI is calculated as the sum of the HQs by:

$$HI_t = HQ(COPC_1) + HQ(COPC_2) + ... HQ(COPC_n)$$
 (7-10)

where

HI_t = total hazard index

HQ(COPC_n) = individual non-carcinogenic COPC hazard

If the receptor is exposed through multiple pathways, the HI is calculated by first estimating the HQs for the COPC in each exposure pathway and then summing the HQs to calculate a pathway-specific HI. Pathway HIs are then summed to produce a total HI specific to the receptor.

By summing the HQs across pathways and COPC, it is assumed that all COPC exhibit similar toxic properties and that those from different pathways manifest the same toxic effects. This is not usually the case, however, and hence this additive approach produces a conservative estimate. Therefore, where the total HI exceeds unity, the potential non-carcinogenic hazards have been evaluated separately by each target organ system.

7.3 RISKS POSED BY RESIDUAL CHEMICAL CONCENTRATIONS

The methodology described above has been used for calculating risks to an adult worker on the MEW Property, an adult construction worker off Site and a child/adult resident off Site. The results of the risk assessment are discussed in the following sections.

7.3.1 RISKS TO ON-SITE ADULT WORKER

The risks to an adult worker on Site have been calculated using three different cancer slope factors for TCE, as discussed in **Section 4.4**. The RME risk calculations for using each slope factor are presented in **Tables 7-2** to **7-4**. The total HI and ILCR for each RME scenario modeled are presented in **Table L** below. The CTE risk calculations for using each slope factor are presented in **Tables 7-5** to **7-7**. The total HI and ILCR for each CTE scenario modeled are presented in **Table M** below.

Table L: Summary of RME Health Risks to Adult Worker on MEW Property

TCE Slope Factor	Total Hazard Index	Incremental Lifetime Cancer Risk
High	01	1 x 10 ⁻⁵
Moderate	0.1	6 x 10 ⁻⁶
Low	0 1	6 x 10-6

Note: Incremental lifetime cancer risks have been calculated for an adult worker for a 25-year exposure duration.

Table M: Summary of CTE Health Risks to Adult Worker on MEW Property

TCE Slope Factor	Total Hazard Index	Incremental Lifetime Cancer Risk
0.4	0 09	2 x 10 ⁻⁶
0.02	0 09	1 x 10-6
0 006	0.09	1 x 10-6

Note: Incremental lifetime cancer risks have been calculated for an adult worker for a five-year exposure duration.

The RME HI for the adult worker on the MEW Property is estimated to be 0.1. The estimated RME ILCR for the adult worker on the MEW Property ranges from 1×10^{-5} to 6×10^{-6} , depending on which TCE slope factor is used. These ILCRs are based on an exposure duration of 25 years.

The CTE HI for the adult worker on the MEW Property is estimated to be 0.09. The estimated CTE ILCR for the adult worker on the MEW Property ranges from 2×10^6 to 1×10^6 , depending on which TCE slope factor is used. These ILCRs are based on an exposure duration of 25 years.

7.3.2 RISKS TO OFF-SITE ADULT CONSTRUCTION WORKER

The risks to an adult construction worker off Site have been calculated using three different cancer slope factors for TCE, as discussed in **Section 4.4**. The RME risk calculations using each slope factor are presented in **Tables 7-8** to **7-10**. The total HI and ILCR for each RME scenario modeled are presented in **Table N** below. The CTE risk calculations using each slope factor are presented in **Tables 7-11** to **7-13**. The total HI and ILCR for each CTE scenario modeled are presented in **Table N** below.

Table N: Summary of RME Health Risks to Adult Construction Worker on Wetland Area

	Organic COPC				
TCE Slope Factor	Total Hazard Index	Incremental Lifetime Cancer Risk			
0.4	2	5 x 10- ⁷			
0.02	2	4 x 10-7			
0.006	2	4 x 10 ⁻⁷			

Note: Incremental lifetime cancer risks have been calculated for an adult construction worker for a one-year exposure duration.

Table O: Summary of CTE Health Risks to Adult Construction Worker on Wetland Area

	Organic COPC							
TCE Slope Factor	Total Hazard Index	Incremental Lifetime Cancer Risk						
High	0.5	2 x 10 ⁻⁷						
<u> Moderate</u>	0.5	1 x 10 ⁻⁷						
Low	0.5	1 x 10 ⁻⁷						

Note: Incremental lifetime cancer risks have been calculated for an adult construction worker for a-one year exposure duration.

The RME HI for the adult construction worker from organic COPC in the wetland area is estimated to be 2. The estimated RME ILCR for organic COPC for the adult construction worker in the wetland area range from 5×10^{-7} to 4×10^{-7} , depending on which TCE slope factor is used. These ILCRs are based on an exposure duration of one year.

The CTE HI for the adult construction worker from organic COPC in the wetland area is estimated to be 0.5. The estimated CTE ILCR for organic COPC for the adult construction worker in the wetland area range from 2×10^{-7} to 1×10^{-7} , depending on which TCE slope factor is used. These ILCRs are based on an exposure duration of one year.

7.3.3 RISKS TO OFF-SITE RESIDENTIAL RECEPTOR

The risks to a potential future off-site residential receptor have been calculated using three different cancer slope factors for TCE and for four different scenarios, varying only by the location of the domestic water supply well:

- **Scenario 1**. Risk to future off-Site residents from indoor vapor inhalation, recreational use of the creek and tap water use from Hypothetical Well A;
- **Scenario 2**. Risk to future off-Site residents from indoor vapor inhalation, recreational use of the creek and tap water use from Hypothetical Well B;
- **Scenario 3**. Risk to future off-Site residents from indoor vapor inhalation, recreational use of the creek and tap water use from Hypothetical Well C; and
- **Scenario 4**. Risk to future off-Site residents from indoor vapor inhalation, recreational use of the creek and tap water use from Hypothetical Well D.

The RME risk calculations for a child receptor using each slope factor and hypothetical well location are presented in **Tables 7-14** to **7-25**. The RME risk calculations for an adult receptor using each slope factor and hypothetical well location are presented in Tables **7-26** to **7-37**. The

CTE risk calculations for a child receptor using each slope factor and hypothetical well location are presented in **Tables 7-38** to **7-49**. The CTE risk calculations for an adult receptor using each slope factor and hypothetical well location are presented in **Tables 7-50** to **7-61**.

Summaries of the risk calculation results for the off-Site resident for all four hypothetical well scenarios are presented in **Tables 7-62** and **7-63**. The highest risk occurs for the Hypothetical Well D scenario. As discussed in **6.2.1**, the tap water concentrations for Hypothetical Well D are equal to the maximum predicted concentrations in Hypothetical Wells A and B. The Hypothetical Well D scenario therefore represents worst case conditions for the off-Site resident. The lowest risk occurs for Hypothetical Well C. This well is located furthest from the Site and on the boundary of the modeled organic COPC plume. The calculated risks for Hypothetical Wells C and D therefore represent the total range of calculated risks for the off-Site resident. The total HI and ILCR for RME for these two scenarios are presented in **Tables P** and **Q**, respectively. The percentage contribution to risk from each pathway is given in **Table R**.

Table P: Summary of RME HI to Off-Site Resident

	Hypothetical Well C	Hypothetical Well D
Child	0 06	124
Adult	0 03	53

Table Q: Summary of RME ILCR to Off-Site Resident

	Ну	pothetical W	ell C	Hypothetical Well D			
TCE Slope Factor	High	Moderate	Low	High	Moderate	Low	
Total							
(Child & Adult)	2 x 10-6	4 x 10 ⁻⁷	3 x 10-7	1 x 10-2	1 x 10-2	1 x 10-2	

Note: *Incremental lifetime cancer risks have been calculated for off-Site resident for a 30-year exposure duration, including 6 years as a child and 24 years as an adult.

The estimated RME ILCR for organic COPC for the residential receptor ranges from 3 x 10^{-7} to 1×10^{-2} , depending on the location of the hypothetical well and the TCE slope factor used. These values have been calculated for a 30-year exposure duration, including 6 years as a child and 24 years as an adult. The organic ILCR is highly dependent on the location of the hypothetical well. Hypothetical Well C located on the edge of the modeled organic COPC plume has significantly lower predicted concentrations of COPC than Hypothetical Well D and thus has a lower calculated risk. The calculated ILCR for organic COPC for the off-Site resident using Hypothetical Well C ranges from 3 x 10^{-7} (low TCE carcinogenic slope factor) to 2 x 10^{-6} (high TCE carcinogenic slope factor).

Table R: RME Percentage Contribution to Risk for Off-Site Resident

			% Con	tribution t	o Total Ex	posure		_
Scenario	Hypothetical Well A		Hypothetical Well B		Hypothetical Well C		Hypothetical Well D	
	ILCR	HI	ILCR	н	ILCR	н	ILCR	НІ
		Or	ganic CC	PC				
Inhalation – vapor intrusion	0.02	050	0.01	0.09	98.37	95.45	0.01	0.05
Ingestion – tap water	11 14	13.00	10 68	13.40	0.01	0	11.25	13.05
Dermal contact – tap water	69.52	24.72	71.66	27.68	0.04	0	69.44	24 57
Inhalation – tap water	19.32	62.23	17.65	58.83	0.01	0.010	19 30	62. 33
Ingestion – creek water	0	0	0	0	0.27	0.16	0	0
Dermal contact – creek water	0	0	0	0	1.30	4.38	0	0
Total	100	100	100	100	100	100	100	100

The total RME HI for organic COPC is estimated to be 0.06 for a child resident and 0.03 for an adult resident.

A summary of the risk results for each organic COPC with an HI in excess of 0.1 and an ILCR in excess of 1 x 10^{-6} is presented in **Table S** for the Hypothetical Well D scenario.

Table S: Summary of HI and ILCR for Organic COPC, Hypothetical Well D

	T			
COPC	ILCR	COPC	HI	Target Organ
1,1,2,2-Tetrachloroethane	1 71E-06	Chlorobenzene	75	Liver
1,2-Dichloroethane	2 23E-06	1,2,4-Trichlorobenzene	18	Adrenal Gland
Bromodichloromethane	2 33E-06	Aroclor-1254	12	Skin, Immune System, Liver
3,3-Dichlorobenzidine	2.79E-06	Trichloroethene	72	Liver, Kidney and
				Developing fetus
Aroclor-1221	3 07E-06	Benzene	42	Blood, Immune System
Aroclor-1232	3 71E-06	Bis(2-ethylhexyl)phthalate	31	Liver, Kidney
Vinyl Chloride	4 62E-06	Naphthalene	13	Blood, Liver, Kidney,
				Nervous System,
				Reproductive System
Hexachloro-1,3-Butadiene	6 60E-06	Hexachloro-1,3-Butadiene	0 73	Kidney
Aroclor-1016	8 18E-06	Hexachlorobenzene	0.30	Liver
Aroclor-1248	8 76E-06	Nitrobenzene	0 26	Liver, Kidney
2,4-Dinitrotoluene	1 20E-05	1,4-Dichlorobenzene	0 24	Blood, Liver and Kidney
Benzo(k)fluoranthene	1 30E-05	2,4,6-Trichlorophenol	0 21	No Data
Aroclor-1242	1 53E-05	Aroclor-1016	0 21	Fetus (low birth weight)
Aroclor-1254	2 62E-05	1,3-Dichlorobenzene	0 18	Liver
2,6-Dinitrotoluene	2 65E-05	4,6-Dinitro-2-Methyl Phenol	0 13	Eye
Benzo(a)anthracene	3 55E-05	Chloroform	011	Liver
Benzo(b)fluoranthene	3.80E-05	Pentachlorophenol	011	Liver, Kidney
Indeno(1,2,3-cd)Pyrene	4 70E-05			
Bis(2-ethylhexyl)phthalate	5 77E-05			
Chloroform	7 35E-05			
Pentachlorophenol	9 58E-05			
1,4-Dichlorobenzene	1 11E-04			
Hexachlorobenzene	1 72E-04			
Benzene	2 25E-04			
Benzo(a)pyrene	5 19E-04			
Trichloroethene	5 48E-04			
Bis(2-Chloroethyl) Ether	5 79E-04			
N-Nitrosodi-n-propylamine	7 96E-04	}		
Tetrachloroethene	9 12E-04			
Dibenzo(a,h)Anthracene	1 84E-03			
Aroclor-1260	5 91E-03			

Table S shows that there are a number of target organs that would likely be affected by the COPC giving HIs of greater than 0.1.

The total HI and ILCR for CTE for off-Site residents using Hypothetical Wells C and D are presented in **Tables U** and **V**, respectively.

Table T: Summary of CTE HI to off-Site resident

ganic COPC	0 04	75
		 -
ganic COPC	0 02	20
	ganic COPC	ganic COPC 0 02

Table U: Summary of CTE ILCR to Off-Site Resident

	Нуро	thetical We	eli C	Нур	othetical W	eli D
TCE Slope Factor	High	Moderate	Low	High	Moderate	Low
Total (Child & Adult)	5 x 10 ⁻⁷	1 x 10 ⁻⁷	1 x 10 ⁻⁷	2 x 10 ⁻³	2 x 10 ⁻³	2 x 10 ⁻³

Note *Incremental lifetime cancer risks have been calculated for off-Site resident for an 11-year exposure duration, including 2 years as a child and 9 years as an adult

The estimated HI for CTE for organic COPC is up to 0.04 for Hypothetical Well C scenario and 75 for the Hypothetical Well D scenario. The estimated total ILCR for CTE from organic COPC for the off-Site residents ranges from 5×10^{-7} to 2×10^{-3} , depending on which Hypothetical Well is used.

7.3.4 RISKS TO OFF-SITE TRESPASSER

The risks to the off-Site trespasser have been assessed through the off-Site resident scenarios. The dermal contact and incidental ingestion with creek water are relevant to this receptor. The risk for these scenarios is shown for the adult and child receptor in **Tables 7-14** to **7-61**. These are summarized in **Tables V** and **W**.

Table V: Summary of HI to Off-Site trespasser

	RME	CTE
Child_	0.003	0.001
Adult	0.002	0.0006

Table W: Summary of ILCR to Off-Site Trespasser

		RME				
TCE Slope Factor	High	Moderate	Low	High	Moderate	Low
Total	3 x 10-8	3 x 10 ⁻⁸	3 x 10 ⁻⁸	5 x 10 ⁻⁹	5 x 10 ⁻⁹	4 x 10 ⁻⁹
(Child & Adult)						

RME incremental lifetime cancer risks have been calculated for the off-Site trespasser for a 30-year exposure duration, including 6 years as a child and 24 years as an adult. CTE incremental lifetime cancer risks have been calculated for off-Site trespasser for an 11-year exposure duration, including 2 years as a child and 9 years as an adult.

7.4 EVALUATION OF NON-CANCER RISK BY TARGET EFFECT

For exposure scenarios where the resulting total HI exceeds unity, an additional evaluation of the potential for non-carcinogenic hazards has been performed. In accordance with RAGS Guidance (U.S. EPA, 1998), the potential for non-carcinogenic hazards has been evaluated separately for each target organ system.

The RME HI for both the off-Site resident scenario (Hypothetical Well D – worst case scenario) and the off-Site worker scenario exceeds 1. The HI by target organ for each of these exposure scenarios is summarized below:

Table X: Summary of HI by Target Effect – Off-Site Resident (Hypothetical Well D)

Target Organ/Effect	HI	Target Organ/Effect	HI
Liver	118	Eye	0
Adrenal Gland	20	Nervous System	0
Immune System	16	Nasal	0
Kidney	_13	Respiratory	0
Skin	12	Mortality	0
Blood	7	Bile Duct	0
Developing Fetus	7	Lung	Ō
Central Nervous System	8	Systemic Tissue	0
Endocrine system	7	Lymphoid System	0
Bone Marrow	4	Thymus	0
Reproductive System	1		

Based on the above table, it can be concluded that there is an unacceptable level of risk to the off-Site resident, specifically to the following target organs where the HI exceeds 1: liver, adrenal gland, immune system, kidney, skin, blood, developing fetus, central nervous system, endocrine system, bone marrow, and reproductive system.

Table Y: Summary of HI by Target Effect – Off-Site Worker

Target Organ/Effect	HI	Target Organ/Effect	HI
Liver	1.5	Central Nervous System	0.0
Kidney	0.6	Adrenal Gland	0.0
Fetus (low birth weight)	0.6	Immune System	0.0
Blood	0.0	Intestinal Epithelium	0.0
Skin	0.0	Bile Duct	0.0
Hematopoietic System	0.0	Eye	0.0
Immune System	0.0	Lung	0.0
Reproductive System	0.0	Mortality	0.0
Lymphoid System	0.0	Respiratory	0.0
Thymus	0.0	Systemic Tissue	0.0

Based on the above table, it can be concluded that there is an unacceptable level of risk to the off-Site construction worker, specifically to the liver, as the HI for the target organ exceeds 1.

8 UNCERTAINTY ANALYSIS

The assumptions, procedures, and parameters used in this risk assessment are subject to various degrees of uncertainty. Uncertainty is inherent in the risk assessment process. The uncertainty analysis provides an understanding of the limitations in interpretation of the quantitative estimates of risk presented in this health risk assessment.

8.1 SAMPLE COLLECTION AND ANALYSIS

Environmental sampling and analysis error can stem from improper sample collection and handling procedures, inadequate sample numbers, laboratory analysis errors, and the statistical biases in the sampling due to heterogeneity of Site soil. The use of standard techniques such as the collection of duplicates, and the use of triplicate and method blanks can be used to reduce the likelihood of errors. Errors in data analyses can occur from the simplest tabulation and typographical errors to complex interpretational errors. Matrix interferences due to the presence of high concentrations often raise the detection limits of other chemicals in the analytical procedure and introduce uncertainty in the method of data analyses.

The quantification of potential exposures is based on statistical summaries of environmental sampling results. For the on-Site worker, 95 percent UCL groundwater concentrations were used as the source term in the vapor modeling for this receptor. To take account of uncertainty in the groundwater modeling and to reflect the fact that current off-Site concentrations may be influenced by historical on-Site groundwater concentrations, the maximum recorded on-Site concentrations of organics have been used as the source term in the groundwater modeling. One-half the MDL of non-detectable chemicals has been used as the source term in the groundwater modeling.

Bis(2-ethylhexyl) phthalate has been detected sporadically in a number of groundwater samples, as well as field and equipment blanks. In total, bis(2-ethylhexyl) phthalate was detected in 87 out of 248 samples. Bis(2-ethylhexyl) phthalate was also detected in 53 corresponding field and/or equipment blanks. This chemical is used as a plasticizer and it is likely that its occurrence within samples and blanks is due to the use of plastic sampling equipment. This chemical may be also be present in field blanks as water typically provided by the laboratory for subsequent submission as blank samples is often stored in plastic containers. Data with a "B" qualifier was included in the risk assessment only if the concentration in the sample exceeded ten times the maximum concentration reported in the blank. Bis(2-ethylhexyl)

phthalate detected in samples at concentrations exceeding ten times the maximum concentration reported in the blank on two occasions. Therefore, 51 bis(2-ethylhexyl)phthalate detection were not considered further in the risk assessment. The inclusion of this chemical as a COPC in this risk assessment is considered conservative and may result in the over estimation of risk to potential receptors, as it is not believed that bis(2-ethylhexyl)phthalate is present in groundwater beneath the Site.

Non-detected COPC have been selected by comparison of the maximum MDL with screening levels based on the U.S. EPA Region 9 PRG values. The inclusion of non-detected constituents as COPC may result in an over- or under- estimation of the actual risk. If the actual concentration of any given COPC is greater than one-half the MDL, the risk will be under-estimated. Alternatively, if the actual concentration is less than one-half the MDL the risk will be over-estimated.

8.2 EXPOSURE PARAMETERS

Exposure scenarios that incorporate the most likely Site-specific exposure pathways and represent the greatest potential for exposure were selected to evaluate potential exposure. Conservative assumptions consistent with State and Federal guidelines were used to quantitatively define the RME exposure scenarios. The methods and procedures contribute to an overall overestimation of potential exposure. Numerous conservative exposure assumptions were made in selecting the reasonable maximum exposure parameters used in this assessment. Duration, frequency, and other input parameters were selected to overestimate exposure to the potentially exposed individual and are not an accurate portrayal of actual exposure. For example, an exposure duration of 24 hours per day was assumed for the residential receptor for the indoor inhalation of air. This is conservative as it is considered unlikely that a residential receptor would spend 24 hours a day inside, 350 days per year. The quantitative effect of these uncertainties contributes to an overall overestimate of potential health risks.

Perhaps, the most conservative assumptions have been made in quantitatively defining the RME off-Site worker exposure scenario. It has been assumed that a typical construction worker could be exposed to groundwater at the Site 250 days a year for 12 hours per day. Although it is likely that a typical construction project could last an entire year, the period of time that exposure to groundwater would be likely would only be a fraction of the overall construction period. Excavations and trenches would typically only be open for short periods of time and would most likely be advanced using mechanical means. Furthermore, it is possible that shallow groundwater may not be encountered during construction activities and in the event

that groundwater is present, it is likely that a de-watering strategy would be implemented. As this exposure scenario assumes dermal contact with, and incidental ingestion of, shallow groundwater, the quantitative effect of these uncertainties contributes to an overestimation of potential health risks to the off-Site worker.

Exposure parameters have also been selected for CTE scenarios. These parameters have deliberately been chosen to estimate average conditions. The use of average conditions may under estimate the risk to some receptors and therefore the use of RME is considered more appropriate for making risk decisions.

8.3 MODELING RESULTS

8.3.1 GROUNDWATER MODELING

The groundwater fate and transport modeling was conducted to predict concentrations of organic COPC in groundwater off Site for use in the risk quantification. There are a number of uncertainties within the model that affect the likelihood of the predicted concentrations occurring. These are discussed below:

8.3.1.1 Model Code

POE concentrations for organic COPC have been predicted using an EPM groundwater model. The EPM model code Modflow was selected to do this for several reasons:

- Modflow is capable of modeling several layers with multiple boundary conditions;
- Modflow is a widely used and accepted EPM model; and
- Modflow allows groundwater flow and contaminant transport to be simulated.

The assumption of EPM conditions is a simplification of actual groundwater flow at the Site. The alluvial and loess deposits are both porous media and therefore flow through these deposits is best represented using an EPM model. However, groundwater flow through the limestone occurs primarily through fractures. The fracture network modeling code Fracman has been used to model groundwater and contaminant transport through the fractures in the limestone. This code cannot be used for modeling EPM flow or transport in the loess or alluvial deposits and therefore is not sufficient by itself to estimate POE concentrations.

The results of the fracture network modeling have been compared with those from the EPM model to assess the validity of the latter for simulating transport through the fractured limestone. This process has shown that the maximum off-Site concentrations predicted by the

EPM model are similar to those predicted by the fracture network model and therefore the EPM model is considered suitable for estimating POE concentrations.

There is uncertainty over the exact locations and connectivity of fractures at the Site. Fracture exposure mapping and borehole core data have been used to define fracture statistics and these have been used to create the fracture network model. This model has shown various possible fracture pathways from the MEW Property that COPC could travel. The highest off-Site concentrations are predicted to occur in fractures that are connected to and down hydraulic gradient from fractures at the MEW Property. Geophysics has been used to locate off-Site monitoring wells within such fractures. However, it is possible that key flow fractures have been missed and therefore it is possible that the off-Site wells do not truly represent worst-case off-Site concentrations. The EPM model predicts higher concentrations than those observed in off-Site wells and is therefore considered a better methodology for predicting worst-case off-Site POE concentrations than sample data.

As discussed above, the EPM model is considered suitable for representing maximum off-Site concentrations for use in the risk calculations but there remains uncertainty over exactly where these maximum concentrations would occur. Although the EPM model can reasonably predict COPC concentrations in a simulated fracture and model results are valid for scales of evaluation that are likely to include one or more fractures, the exact occurrence, location and geometry of fractures in the field are not known. Therefore, model results can be used to assess worst-case risk to hypothetical receptors (by wells modeled as being installed in simulated fractures); however, the results can not be used at the scale necessary to precisely locate wells for either remediation or water supply purposes. The POE locations have been selected where the off-Site maximum concentrations are predicted to occur by the groundwater model. It should be noted that these locations may not be optimal, *i.e.* the maximum concentrations may occur in slightly different locations than those predicted by the model. Furthermore, the plume shape predicted by the model may not be accurate. This uncertainty does not affect the validity of the EPM model for predicting POE concentrations but should be considered if using the results of the modeling for other purposes.

8.3.1.2 Groundwater Flow Parameters

The groundwater flow component of the model was calibrated to observed groundwater levels. This involved adjustment of hydraulic conductivity and recharge until the modeled groundwater heads were an adequate representation of observed heads. Calibration was found possible with a range of values for these parameters. To ensure that a conservative approach

was taken the calibrated model that represented worst-case conditions for the off-Site migration of COPC was adopted for the chemical transport modeling. This model includes a high transmissivity fracture that runs directly from the source area in the south east corner of the Property to the wetland area and uses highest likely values of recharge and hydraulic conductivity.

This model has been developed to represent reasonable worst-case conditions for chemical migration from the Site. The high transmissivity fracture leading from the Property to the wetland area effectively provides a conduit for groundwater flow, channeling recharge through the source zone and allowing chemicals to rapidly migrate to the wetland area. In reality, this is unlikely to occur. Fracture mapping has shown that fractures are relatively evenly spaced, in close proximity to each other (5 m in the weathered zone) and that there are two approximately orthogonal sets. As a result, COPC migration is likely to become distributed throughout a number of fractures before reaching the wetland area. This has been demonstrated by the fracture modeling which has shown that COPC are likely to be distributed between a number of fractures within 600 feet (180 m) of the MEW Property. This result suggests that dispersion may be underestimated in the EPM model. However, given the uncertainty involved in modeling complex fracture network systems, the assumption of one transmissive fracture leading directly from the Site is considered suitable for estimating RME POE concentrations.

8.3.1.3 Chemical Transport Parameters

The difficulties inherent in obtaining Site-derived values for many of the chemical transport parameters, has meant that literature values have had to be used. To account for the uncertainty involved in using literature values, worst case estimates have been adopted. For the non-detectable organic COPC the conservative assumption has been made that biodegradation does not occur. Sensitivity analysis has shown that the modeled concentrations of COPC are highly dependent on these parameters, especially biodegradation half-life. Use of more likely values for this parameter would result in significantly lower concentrations of COPC being predicted beneath the wetland area.

The assumption has been made that retardation does not occur within the weathered or intermediate zones of the limestone. While this is reasonable for the intermediate limestone where fractures are mostly open, it may be overly conservative for the weathered zone, where the fractures are mostly infilled with surficial deposits. Sorption of COPC onto these deposits could significantly retard COPC and result in a significant reduction in the predicted concentrations off-Site.

Finally, the chemical transport modeling uses the maximum observed on-Site concentrations as the source term. Data from other wells located in the source zone show that this is likely to be an overestimate of the actual average concentration within the source area. The modeled flux of COPC from the source zone is therefore likely to be higher than that which occurs in reality. However, given the uncertainty involved in modeling complex fracture network systems, the use of maximum concentrations in the groundwater model as the source term is considered suitable for estimating RME POE concentrations.

8.3.2 VAPOR MODELING

The Johnson-Ettinger model has been used to conduct the vapor modeling. There are a number of uncertainties within this model that must be considered when evaluating the results of the risk assessment.

Firstly, the source concentrations in groundwater used for the modeling are likely to be conservative. The source concentrations used for the on-Site worker are based on the 95th percentile UCL concentrations in the well where the highest concentration of each COPC has The concentrations detected in neighboring wells show that these high concentrations are limited in extent and that the average concentration in groundwater beneath the footprint of a commercial building is likely to be lower. The concentrations in groundwater used for modeling indoor air concentrations in a house off Site are based on the groundwater modeling results. As discussed in **Section 8.3.1**, there is uncertainty involved with the groundwater modeling, but conservative assumptions have been selected to try and ensure that the model results are also conservative.

Secondly, the Johnson-Ettinger model does not model attenuation of COPC within the source zone. Most significantly, aerobic biodegradation within the vadose zone beneath the house or building is likely to significantly reduce the flux of COPC into the building.

8.3.3 DERMAL EXPOSURE

Dermal uptake from contact with impacted groundwater or surface water has been estimated using U.S. EPA recommended methods. These methods require dermal exposure uptake factors, such as the skin permeability coefficient, to be estimated for each COPC. For a number of COPC these parameter values were not available. The estimation of dermal uptake has therefore not been possible for these COPC. The exclusion of the dermal uptake pathways for these COPC will tend to increase the likelihood of underestimating risk.

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8.4 TOXICOLOGICAL DATA

Several aspects of the toxicological data employed in this health risk assessment contain a high degree of uncertainty that affects estimates of potential risk. These uncertainties arise in three primary areas. First, CSFs used in this assessment were estimates representing the 95 percent UCL. This assumption means actual risks are likely to be lower than the risk estimates calculated in this assessment. Use of the 95 percent UCL CSF values is consistent with the approach of determining risk as indicated by the U.S. EPA.

Second, results of animal studies are often used to predict the potential human health effects of a chemical. Extrapolation of toxicological data from animal tests is one of the largest sources of uncertainty in the human health risk evaluation process. There may be important but unidentified differences in uptake, metabolism, distribution, and elimination of chemicals between test species and humans. Animal studies are usually conducted under high-dose conditions, whereas humans are rarely exposed to such high doses. The dose level itself may be responsible for the observed carcinogenic effects. Animal life expectancies tend to be less than 2 years, and assumed human life expectancy is 70 years.

In the absence of pathway-specific toxicological criteria, surrogate values were used in an effort to quantify the risk of potential adverse health effects. This type of surrogate-based calculation will provide estimates of risk that reflect a high degree of uncertainty. Although efforts have been made to use conservative assumptions in performing surrogation, the net effect to an estimate of risk is unknown.

Third, the issue of bioavailability must be explored. It is typically assumed that 100 percent of the chemicals to which a hypothetical subject is exposed to in the environment are absorbed via the routes of exposure. There is a growing body of evidence which suggests that this conservative assumption is not always correct. Toxicological testing of chemicals typically involves the use of purified forms of the chemical, providing a significantly more "severe" exposure then is found in environmental exposures. Therefore it is important to note that chemicals in soil will be absorbed by the body at lower rates than pure forms of the chemical. Risk characterization estimates based on the assumption of 100 percent bioavailability of chemicals in the environment, therefore, tend to overestimate the magnitude of the risk by orders of magnitude. The recently completed report by the Congressional Commission on Risk Assessment and Risk Management (1996), notes that "Agencies should continue to move away from using the hypothetical maximally exposed individual" to evaluate whether a risk exists, toward more realistic assumptions based on available scientific data, as they have done in

recent analyses. We recommend use of analytic methods that, when data permit, combine the many characteristics of probable exposure into an assessment of the overall population's exposures."

It should be noted that there is insufficient human or animal data to derive toxicological reference values for all COPC for all pathways. Very little data on the dermal exposure pathway exists and as a result there are no dermal reference doses or cancer slope factors available from the toxicological sources used for this assessment. In the absence of this data, extrapolation from oral reference doses and cancer slope factors has been used to derive dermal toxicological values. Route to route extrapolation has not been used between the oral and inhalation pathways due to the large uncertainty involved. As shown on **Tables 4-1** through **4-4** toxicological reference values were not available for select COPC. The absence of this data will tend to increase the possibility of underestimating risk.

COPC have been selected by comparison of the maximum measured groundwater concentrations or the maximum MDL with screening levels based on the U.S. EPA Region 9 PRG values. There are four chemicals where no PRG or similar values were available for use as screening toxicity values. These compounds have been conservatively selected as COPC; however, quantitative evaluation is not possible due to lack of adequate toxicity data. The inability to evaluate these chemicals quantitatively in the risk assessment could result in the potential underestimation of risk associated with exposure to any concentrations of these chemicals that may be present below the detection limits.

8.5 UNCERTAINTIES ASSOCIATED WITH COMBINATIONS OF CONSERVATIVE ASSUMPTIONS

Uncertainties from different sources may be compounded in the risk assessment methodology. This evaluation followed Federal agency guidelines by consistently incorporating conservative assumptions in calculating risk. The overall effect of using conservative assumptions in each step of the risk assessment is likely to result in an overestimation of potential risk. Thus, evaluation results must be reviewed with an understanding of the uncertainties involved and how they effect risk estimations. The quantitative effect of the conservative nature of the uncertainties inherent in the methodology and procedures is emphasized by the U.S. EPA in the following statement: "The ... risk is characterized as an upper-bound estimate, i.e., the true risk to human, while not identifiable, is not likely to exceed the upper-bound estimate and in fact may be lower". Findings of insignificant risk may reflect conditions close to reality; however,

findings of measurable risk may reflect conditions that result from the conservative nature of the evaluation.

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9 CONCLUSIONS

The human health risk assessment has been conducted to evaluate the likely risks posed by COPC in groundwater at the MEW Property to future receptors. The risk assessment has been conducted using conservative assumptions to ensure that the calculated risks are higher than those that would likely occur (**Section 8**). This helps to ensure that any risk reducing mitigation measures deemed necessary will be protective of all likely future receptors.

The future land-uses selected were residential for the wetland area and commercial for the MEW Property. A CEM was developed based on these land-uses. The adult worker receptor was selected to represent RME on the MEW Property and the adult construction worker and child/adult resident were selected to represent RME off-Site. The risk to these receptors is summarized below.

Adult Worker on MEW Property

A deed restriction will be applied to the MEW Property to ensure that groundwater beneath the Property cannot be extracted for use. Pathways considered complete for the adult worker were:

• Inhalation of volatilized COPC that have migrated from subsurface through floor of building.

Risk quantification was used to characterize the risks to this receptor arising from this pathway. The total HI for this receptor for RME from organic COPC is estimated to be 0.1. This is below the acceptable limit of 1 and it is therefore concluded that there is no significant non-carcinogenic risk to future workers at the MEW Property.

The carcinogenic risk to this receptor was quantified using a range of cancer slope factors for TCE, as recommended by the U.S. EPA. This resulted in a RME ILCR for organic chemicals that ranged from 1×10^{-5} to 6×10^{-6} . The estimated total RME ILCRs are within the acceptable risk management range.

Off-Site Construction Worker

Pathways considered complete for the off-Site adult construction worker were:

- Dermal contact with groundwater while involved in excavation activities; and
- Incidental ingestion of groundwater while involved in excavation activities.

Risk quantification was used to characterize the risks to this receptor arising from this pathway. The HI for organic COPC for this receptor for RME is estimated to be 2. This is above the acceptable limit of 1 and it is therefore concluded that there could be a significant non-carcinogenic risk from organic COPC to future construction workers in the wetland area.

The estimated ILCRs for organic COPC for this receptor for RME are between 4 x 10^{-7} and 5×10^{-7} . The estimated total RME ILCRs are within the acceptable risk management range. It is therefore concluded, that there is no significant carcinogenic risk to future construction workers in the wetland area from organic COPC.

Off-Site Resident

Pathways considered complete for the off-Site resident were:

- Inhalation of volatilized COPC that have migrated from subsurface through floor of house;
- Inhalation of volatilized COPC from tap water obtained from a domestic water supply well;
- Ingestion of tap water obtained from a domestic water supply well;
- Dermal contact with tap water obtained from a domestic water supply well;
- Incidental ingestion of groundwater (that has discharged to surface water); and
- Dermal contact with groundwater (that has discharged to surface water).

Risk quantification was used to characterize the risks to this receptor arising from these pathways. The total HI for organic COPC for this receptor is estimated to range from 0.06 to 124. The calculated ILCR for organic COPC for RME ranges from 3×10^{-7} to 1×10^{-2} . The highest risk occurs when using the modeled worst case off-Site concentrations for tap water (Hypothetical Well D). The lowest risk occurs when using the predicted concentrations for tap water from Hypothetical Well C located on the edge of the modeled organic COPC plume. The calculated total HI and ILCR for organic COPC for the off-Site resident exceed the acceptable risk management limits of 1 and 1 x 10^{-4} , respectively for the worst case scenario (Well D). These ILCR values are based on an exposure duration of 30 years, including 6 years as a child and 24 years as an adult. From these results, it can be concluded that there could be a significant risk to future off-Site residents who use impacted groundwater for water supply. However, the risk to future off-Site residents who do not use impacted groundwater for water supply is acceptable.

These results show that there could be a significant risk to off-Site residents from organic COPC. This risk is primarily due to the use of impacted groundwater for water supply. Provided that

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impacted groundwater is not used as water supply, the risk to this receptor from organic COPC is not likely to be significant.

Off-Site Trespasser

Pathways considered complete for the off-Site trespasser were:

- Incidental ingestion of groundwater (that has discharged to surface water); and
- Dermal contact with groundwater (that has discharged to surface water).

The risks to this receptor have been assessed as part of the risk quantification for the off-Site resident. The total HI for this receptor for RME from organic COPC is estimated to be 0.003. This is below the acceptable limit of 1 and it is therefore concluded that there is no significant non-carcinogenic risk to future off-Site trespassers.

The carcinogenic risk to this receptor was quantified using a range of cancer slope factors for TCE, as recommended by the U.S. EPA. This resulted in a RME ILCR for organic chemicals of 3.0×10^{-8} . The estimated total RME ILCR is within the acceptable risk management range.

Summary

The results of the risk assessment have demonstrated that the risk to adult workers at the MEW Property is unlikely to be significant. This is based on the assumption that a deed restriction is applied to the Property to prevent the usage of groundwater beneath it.

Groundwater fate and transport modeling has indicated that the groundwater plume containing COPC could extend off Site to the southeast of the MEW Property beneath the wetland area. The risk assessment has shown that use of the potentially impacted groundwater beneath the wetland area could present a significant risk to residential receptors and dermal contact with and incidental ingestion of potentially impacted groundwater could present a significant risk to off-Site construction workers.

10 CLOSURE/LIMITATIONS

This report has been prepared for the exclusive use of MEW Site Trust Fund Donors as it pertains to the MEW Site in Cape Girardeau, Missouri. Our services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by reputable, qualified environmental consultants practicing in this or similar locations. No other warranty, either expressed or implied, is made as to the professional advice included in this report. These services were performed consistent with our agreement with our client.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We do not warrant the accuracy of information supplied by others or the use of segregated portions of this report.

The purpose of a geologic/hydrogeologic/contaminant/health assessment is to reasonably characterize environmental conditions or risks at the Site. In performing such an assessment, it is understood that no investigation is thorough enough to describe all conditions of interest at a given Site. If conditions have not been identified during the investigation, such a finding should not, therefore, be construed as a guarantee of the absence of such conditions at the Site, but rather as the result of the services performed within the scope, limitations, and cost of the work performed.

In regard to geologic/hydrogeologic/contaminant/risk assessment, our professional opinions are based in part on interpretation of data from discrete sampling locations. It should be noted that actual conditions at locations that have not been sampled may differ from those interpreted from sampled locations.

Respectfully submitted,

KOMEX

Simon Firth

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Project Hydrogeologist

cc: distribution list attached

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TABLE 3-1
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR DETECTED ORGANICS
MISSOURI ELECTRIC WORKS

	Compound	1,1,1-TCA	TCE	PCF	11-DCA	1,1-DCE	1,2-DCE, Total	Benzene	Bromo- dichloro- methane	Chloro- benzene	Chloro- methane	Methylene Chloride	Toluene	Chloroform	Acetone	1,2,4-TCB	1,2-DCB	1,3-DC8	1,4-DCB	Bis(2-chioroethyl) ether	Butyl benzyl phthalate	2-Chloro- phenol	N-Nitrosodi-n- propylamine	Diethyl Phthalate	Dimethyi Phthalate	Di-n-butyl phthalate	Bis(2-ethylhexyt) phthalate	Naphthalene	Phenoi	Aroctor 1260 Unfiltered	Aroctor 1260 Filtered
	Method	8260B	-		8260B	82608	82608	82608	8260B	8260B	82608	82608	82608	82608	82608	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8082	8082
Well ID	Sample Date	(h8/r)	(hB\r)		(µg/L)	(µg/L)	(h Q /L)	(µg/L)	(ha/r)	(µg/L)	(ha/r)	(µg/L)	(µg/L)	(µg/L)	(ha\r)	(hB/r)	(ha\r)	(µg/L)	(µg/L)	(hā\r)	(ha/r)	(µg/L)	(µg/L)	(µg/L)	(h8\r)	(µg/L)	(hQ/L)	(µg/L)	(ha/r)	(µg/L)	(µg/L)
MW-3	06/20/00	<50			< 5.0	< 5.0	<5.0	11 53	< 5.0	710	< 5.0	< 5.0	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 10	15 <10	37 < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	21	<10	< 10	<1.0	<1.0
MW-3 MW-3	04/25/01 07/26/01	< 5.0 < 5.0			< 5.0 < 5.0	< 5.0 < 5.0	<5.0 <5.0	5.6	< 5.0 < 5.0	510 320	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	<50	<50	< 10	< 10 < 10	<10	16	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	4.7 1.1	<020 <050
E-WM	10/24/01	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	16	<5.0	1400	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 10	< 10	< 10	17	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	40.50	-
MW-3	01/23/02	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	14	< 5.0	1600	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	12	< 10	< 10	< 10	< 10	< 10	< 10	13	18	< 10	< 10	1.2	<0.50
MW-3 MW-3	05/08/02 08/07/02	< 5.0 < 5.0	<50 <50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	17 11	<50 <50	1200 590	< 5.0 < 5.0	< 5.0 < 5.0	<50 <50	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 10 < 10	19 19	17 18	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	2 J 2 J	< 10 2 J, B	< 10	< 10 < 10	40.50	-
MW-3	10/31/02	< 5.0	<5.0	< 5.0	<5.0	<5.0	< 5.0	, ,	<50	630	< 5.0	2 J	< 5.0	<5.0	<5.0	< 10	2 J	73	20	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	0.7 <0.50	<0.50 −
MW-3 (EPAS)	10/31/02]	<1	<1	<1	<1	<1	8.3	-	380	-	- '	-	<5.0	<5.0	_	<5	L8	20) -] -	<10	< 10	Ì -	-	- 1	-	< 10	< 10	2.1	0.200
MW-3	02/05/03	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	9.6	< 5.0	800	< 5.0	< 5.0	< 50	< 5.0	<50	< 10	21	9.3	22	< 10	< 10	< 10	< 10	< 10	< 10	< 10	12	< 10	< 10	<0.50	-
MW-3 MW-3	05/06/03 08/14/03	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	7.3 8.0	< 5.0 < 5.0	630 420	< 5.0 2.2 J	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 10 23 J	< 10 8.9 J	< 10 21	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	71 B* < 10	< 10 8.7 J	< 10 < 10	<0.25 <0.50	-
MW-3	10/28/03	< 5.0	< 5.0	<50	< 5.0	<5.0	< 5.0	11	< 5.0	250	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	22 J	8.6.1	24	< 10	< 10	< 10	< 10	< 10	< 10'	<10	< 10	< 10	< 10	40.50	_
E-WM	02/03/04	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	8.8	< 5.0	690	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 10	17J	5.8.3	16	< 10	< 10	< 10	< 10	< 10	< 10	< 10	1.6 J, B	4.7 J	< 10	<0.50	_
E-WM	05/19/04	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	90	< 5.0	770	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 10	1.5 J	5.7 J	15	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	⋖ 0 25	-
MW-3 MW-3	08/11/04 11/17/04	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	6.1 4.7 J	< 5.0 < 5.0	520 390	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	20 J < 10	64J 46J	16 13	< 10 <10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 <10	< 10 <10	< 10 < 10	15 < 10	< 10	< 10 < 10	0.36J	<0.50
MW-4	09/26/00	< 5.0	<50	₹50	5.6	<50	< 5.0	<50	<50	< 5.0	<50	< 5.0	<50	<5.0	210	< 10	< 10	< 10	< 10	< 10	<10	<10	<10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	<0.25 <1.0	-\ \(1,0\)
MW-4	04/24/01	< 5.0	<50	< 5.0	19	7.7	< 5.0	< 5.0	<5.0	30	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	41	< 10	13	14	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	€020	_
MW-4	07/25/01	< 5.0	< 5.0	< 5.0	8.8	< 5.0	< 5.0	< 5.0	< 5.0	6.3	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-4 MW-4(DUP)	10/25/01	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 13	< 50 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	15 14	<5.0 <50	< 5.0 < 5.0	<50 <5.0	< 5.0 < 5.0	<50 <50	17 18	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	₹0.50	-
MW-4	01/23/02	<5.0	< 5.0	<50	15	6.4	<5.0	<5.0	< 5.0	21	<5.0	< 5.0	<5.0	< 5.0	< 5.0	16	< 10	<10	< 10	<10	< 10	< 10	< 10	< 10	< 10	14	< 10	<10	< 10	<0.50 <0.50	_
MW-4	05/08/02	< 5.0	5	31	24	99	41	< 5.0	< 5.0	42	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	30	31	81	13	< 10	< 10	< 10	< 10	< 10	< 10	< 10	9 J, B	< 10	< 10	40.50	_
MW-4	08/07/02	< 5.0	31	8.6	17	6.1	2 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	41	< 10	< 10	< 10	< 10	< 10	< 10	31	38 B	< 10	< 10	<0.50	-
MW-4	10/31/02	< 5.0 _	2 J 14	2 J 24	7.5 6.4	3 J 22	< 5.0 < 1	<5.0 <1	< 5.0	<5.0 <1	< 5.0	2 J < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 10 < 5	< 10 < 5	< 10 < 5	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 10	40.50	-
MW-4 (EPA S) MW-4	05/06/03	< 5.0	3.3 1	< 5.0	9.8	< 5.0	< 5.0	<50	< 5.0	14	< 5.0	<50	< 5.0	< 5.0	<5.0	22	24J	7.4J	71J	< 10	< 10	< 10	<10	< 10	< 10	2 J < 10	4.9 J, B	< 10 < 10	02U <10	0 2U <0 25	0 200
MW-4	08/12/03	< 5.0	3.43	441	18	5.2	20 J	< 5.0	< 5.0	49 J	29 J	< 5.0	< 5.0	< 5.0	<5.0	7.6 J	< 10	10	5.3 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	40.50	-
MW-4	10/28/03	< 5.0	3.01	47 J	15	5.1	1.8 J	< 5.0	< 5.0	43 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	5.5 J	< 10	6.6 J	3.0 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	12 B	< 10	< 10	<0.50	-]
MW-4(DUP) MW-4	10/28/03	< 5.0 < 5.0	3.0 J 5.2	4.9 J < 5.0	13 22	4.4 J 9.8	18J 3.5J	< 5.0 < 5.0	< 5.0 < 5.0	4.0 J 39	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	5.8 J 44	< 10 5.0 J	6.5 J 15	3.0 J 21	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	5.6 J, B 7.2 J, B	< 10	< 10 < 10	40.50	-
MW-4(DUP)	02/03/04	<5.0	5.1	< 50	22	9.2	3.4 J	< 5.0	<5.0	39	< 5.0	< 5.0	< 5.0	<5.0	<5.0	45	531	16	21	< 10	<10	< 10	< 10	< 10	< 10	< 10	7.23, B 19 J, B	< 10 < 10	< 10	<0.50 <0.50	_
MW-4	05/18/04	< 5.0	29 J	< 5.0	16	6.9	24 J	< 5.0	< 5.0	29	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	41	4.8 J	16	23	< 10	< 10	< 10	< 10	< 10	< 10	< 10	5.2 J	< 10	< 10	<0.25	_
MW-4	08/11/04	< 5.0	3.1 J	4.2 J	16	5.7	18J	< 5.0	< 5.0	12	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	11	151	9.4 J	8.2 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-4 MW-4	11/16/04 02/04/03	<50 <50	3.2 J 4 J	26 J 2 J	14 18	6.9 70	1.6 J	< 5.0 < 5.0	< 5.0 < 5.0	23 17	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	21 20	24J 4J	8.7 J 9 J	12 9 J	<10	< 10 < 10	< 10 < 10	< 10 < 10	<10 <10	<10 <10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	<0.25 <0.50	-]
MW-5	06/20/00	<50	< 5.0	< 50	< 5.0	< 5.0	<50	<5.0	< 5.0	21	< 5.0	<5.0	< 5.0	< 5.0	<5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	68	<1.0
MW-5	09/27/00	-	-	-	_	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	<10
MW-5*	09/27/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.6	Q.1>
MW-5 MW-5	04/25/01 07/26/01	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	19 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	85 11	√020
MW-5	10/24/01	< 5.0	< 5.0		< 5.0	<5.0	<5.0	< 5.0	<5.0	16	< 5.0	< 5.0	<50	<5.0	<5.0	< 10	< 10	<10	< 10	< 10	< 10	< 10	<10	< 10	< 10	<10	< 10	<10	< 10	5.4	<0.50 <0.50
MW-5	01/23/02	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	29	<50	< 5.0	< 5.0	< 50	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	13	<0.50
MW-5	05/08/02	< 5.0	< 5.0		< 5.0	< 5.0	<5.0	< 5.0	< 5.0	45	<5.0	< 5.0	< 5.0	<5.0	< 5.0	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	12	<0.50
MW-5 MW-5	08/07/02 11/01/02	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	3 J 2 J	< 5.0 < 5.0	120 130	< 5.0 < 5.0	< 5.0 2 J	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	8 J	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	5 J	4 J, B < 10	< 10 < 10	< 10 < 10	110 36	<0.50 <0.50
MW-5	02/05/03	< 5.0	< 5.0	< 5.0	< 5.0	<50	<5.0	< 5.0	<5.0	44	< 5.0	<50	<50	<5.0	<5.0	< 10	< 10	11	7.J	<10	< 10	< 10	<10	< 10	<10	< 10	< 10	< 10	<10	14	<0.50 <0.50
MW-5	05/06/03	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	79	< 5.0	<50	<50	< 5.0	<50	< 10	< 10	78 J	21	< 10	< 10	< 10	< 10	< 10	< 10	< 10	15 B	< 10	< 10	5.0	€0.25
MW-5	08/14/03	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50	<50	38	1.1 J	< 5.0	<50	<50	< 5.0	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	11	<0.50
MW-5 MW-5	10/28/03	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 . < 5.0	32 20	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	5.3 J < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	3.2 J, B 2.9 J, B	< 10	< 10 < 10	28	<0.50
MW-5	05/19/04	< 5.0		< 5.0	<5.0	<50	< 5.0	<5.0	<5.0	37	<5.0	<5.0	<5.0	< 5.0	<50	< 10	<10	<10	< 10	<10	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10 < 10	<10	<0.50 1.5	_
MW-5	08/11/04	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	< 5.0	48	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	5.2 J	< 10	< 10	< 10	< 10	< 10 -	< 10	< 10	12	< 10	< 10	13	<0.50
MW-5	11/17/04	< 50	<50	< 5.0	< 5.0	< 5.0	<50	<50	< 5.0	14	< 5.0	<50	< 50	< 5.0	< 50	< 10	< 10	< 10	24J	<10	< 10	< 10	< 10	<10	<10	< 10	< 10	< 10	< 10	2.9	<0.50
MW-6A	06/19/00 04/24/01	< 5.0 < 5.0		< 50 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	<50 <50	< 50 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	<10	<1.0
MW-6A MW-6A	04/24/01	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	<50	<5.0	< 5.0 < 5.0	<50	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10 < 10	<0.20 <0.50	_
MW-6A	10/24/01	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	₹0.50	_
MW-6A	01/22/02	< 5.0	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-6A	10/30/02	<50		< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	<50	21	21	< 5.0	<50	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	40.50	-
MW-6A	08/12/03	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 5.0	3.1J	< 5.0	< 5.0	<50	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	

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TABLE 3-1
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR DETECTED ORGANICS
MISSOURI ELECTRIC WORKS

				т	T	T	Ι .	Bromo-			<u> </u>		 :			l	ĺ		 	 							Τ		Aroclor	Aroclor
	Compound	1.1.1-TCA	TCE PCE	1,1-DC/	1,1-001	1,2-DCE Total	Benzene	dichioro- methane	Chloro- benzene	Chloro- methane	Methylene Chloride	Toluene	Chloroform	Acetone	1,2,4-TCB	1,2-DCB	1,3-DCB	1,4-DCB	Bls(2-chloroethyl) ether	Butyi benzyi phthalate	2-Chloro- phenol	N-Nitrosodi-n- propylamine	Diethyl Phthalate	Dimethyl Phthalate	Di-n-butyl phthalate	Bis(2-ethythexyl) phthalate	Naphthalene	Phenol	1260 Unfiltered	1260 Filtered
	Method		82608 8260			82608	82608	8260B	8260B	82608	82608	82608	8260B	82608	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8082	8082
Well ID	Sample Date		(ha\r) (ha\			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(hB/r)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(hg/L)	(µg/L)	(µg/L)	(h a /l)	(µg/L)	(h8/r)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-6A	05/18/04		< 5.0 < 5.0		_	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.25	
MW-7	06/20/00	< 5.0	<50 <50		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	40	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<1.0	<1.0
MW-7	04/25/01	< 5.0	<50 <50 <50 <50		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0	24	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	<0.20	- 1
MW-7 MW-7	07/26/01 10/25/01	< 5.0 < 5.0	<50 <50 <50 <50		< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	<5.0	< 5.0	< 5.0	<5.0	< 5.0	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	40.50)				
MW-7	01/23/02	< 5.0	<5.0 <5.0	l l	< 5.0	< 5.0	< 5.0	<50	5.6	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	< 10	< 10 < 10	< 10 < 10	<0.50 <0.50	_]
MW-7	05/07/02	< 5.0	< 5.0 < 5.0	L .	< 5.0	< 5.0	< 5.0	< 5.0	9.8	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	16	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	<10	< 10	< 10	< 10	40.50 40.50	
MW-7	08/07/02	< 5.0	<5.0 <50		< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	28	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	4 J, B	< 10	< 10	40.50	/
MW-7	10/31/02	< 5.0	< 5.0 < 5.0	0 < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	2 J	< 5.0	< 5.0	< 5.0	8.1	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	1
MW-7	02/05/03	< 5.0	< 5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	15	< 10	2 J	31	< 10	< 10	< 10	< 10	< 10	< 10	< 10	81	< 10	< 10	<0.50	-
MW-7	05/05/03	< 5.0	<50 <50		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	51	< 10	3.5 J	4.0 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	4.2 J, B	< 10	< 10	<0.25	_
MW-7	08/13/03	< 5.0	< 5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	1.7 J	4.8 J	< 5.0	< 5.0	< 5.0	< 5.0	62	2.0 J	4.5 J	8.0 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	- 1
MW-7	10/29/03	< 5.0	<50 <50		< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	16	< 10	1.5 J	19J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	15 B	< 10	< 10	0.35J	-
MW-7	02/04/04	< 5.0	<50 < 5		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	13	< 10	< 10	173	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-7 MW-7	05/20/04	< 5.0	< 5.0 < 5.0 < 5.0 < 5.0		< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	21 36	< 10 < 10	< 10 < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.25	-
MW-7	08/11/04 11/16/04	< 5.0 < 5.0	<50 < 5		< 50	<50	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	25	< 10	< 10	29 J 26 J	< 10 <10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 <10	< 10 <10	< 10 < 10	19 < 10	< 10	< 10	40.5	, -
MW-8	09/26/00	< 5.0	<5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10 < 10	< 10 < 10	<u>40 25</u>	 <1.0
MW-9	06/19/00	<5.0	< 5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	< 10	<1,0 <1,0	<1.0
MW-9	04/24/01	< 5.0	< 5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	<10	< 10	< 10	40.20	
MW-9	07/24/01	< 5.0	<5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	40.50	
MW-9	10/24/01	< 5.0	< 5.0 < 5.0	0 < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	40.50	
MW-9	01/22/02	< 5.0	< 5.0 < 5.0	0 < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	
MW-9	10/30/02	< 5.0	< 5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-9	08/12/03	< 5.0	< 5.0 11		< 5.0	<50	< 5.0	< 5.0	< 5.0	2.2 J	< 5.0	< 5.0	< 5.0	<50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-9	05/18/04	< 5.0	< 5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.25	
MW-10	06/20/00	7.9	< 5.0 < 5.0	1	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	23	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	16	< 10	< 10	<1.0	<1.0
MW-10	04/24/01	8	7.2 < 5.		7	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0 < 5.0	< 5.0	< 5.0	31	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.20	- [
MW-10 MW-10	07/24/01 10/25/01	5.6 6.6	79 < 5.0 5.9 < 5.0		< 5.0 6.8	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	31 28	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 14	< 10 < 10	< 10	<0.50	-
MW-10	01/22/02	6.4	9.3 <5.		7.8	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	18	<10	<10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 10 < 10	40.50	
MW-10	05/08/02	6	13 3		10	< 50	< 5.0	< 5.0	<50	<5.0	< 5.0	< 5.0	<5.0	< 5.0	10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	<10	< 10	<0.50 <0.50	. []
MW-10	08/07/02	<50	12 < 5.	1	8.9	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 50	< 5.0	<50	13	< 10	< 10	2 J	< 10	< 10	< 10	< 10	< 10	< 10	2 J	22.8	< 10	< 10	₹0.50	
MW-10	10/31/02	5.3	12 < 5.		9	< 5.0	< 5.0	< 5.0	< 5.0	<50	3.1	< 5.0	< 5.0	< 5.0	12	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	√0.50	
MW-10	02/04/03	43	97 < 5.	0 22	76	< 5.0	< 5.0	< 5.0	1.1	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	9 J	< 10	< 10	1 J	L9	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	
MW-10	05/06/03	5.0	8.7 < 5.	0 20	47J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	71J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	17 B	< 10	< 10	<0.25	-
MW-10	08/12/03	< 5.0	5.6 < 5.		4.5 J	< 5.0	< 5.0	< 5.0	< 5.0	131	< 5.0	< 5.0	< 5.0	< 5.0	4.1 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-10	10/27/03	< 5.0	44J < 5.		3.7 J	< 5.0	< 5.0	< 5.0	< 5.0	13	< 5.0	< 5.0	< 5.0	< 5.0	3.5 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	-	- 1
MW-10	02/02/04	3.7 J	3.8 J < 5.		4.3 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	26 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	3.6 J, B	< 10	< 10	<0.50	-
MW-10	05/18/04	< 5.0	33J <5		3.4 J	< 5.0	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	12	< 10	< 10	<0.25	-
MW-10(DUP)	05/18/04	< 5.0	3.3 J < 5.		3.6 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	3.0 1	< 10	< 10	<0.25	-
MW-10	08/09/04	< 5.0	3.9 < 5.		2.5 J	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	9.8 J	< 10	< 10	<0.50	-
MW-10(DUP) MW-10	08/09/04 11/16/04	< 5.0 1.8 J	29 J < 5. 26 J < 5.		2.2 J 3.8 J	< 5.0	< 5.0	<50	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0	< 5.0	<5.0	< 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 <10	< 10 <10	< 10 < 10	2.3 J < 10	< 10 < 10	< 10	<0.50	-
MW-10(DUP)	11/16/04	1.8 J	26J < 5		3.41	<5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	<10	< 10	<10	< 10	<10	< 10	<10	<10	< 10	< 10	< 10	< 10 < 10	40.25 40.25	_ }
MW-11	06/22/00	< 5.0	<50 <5		< 5.0	< 5.0	< 5.0	< 5.0	24	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	17	32	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	110	4.5
MW-11(DUP)	06/22/00	< 5.0	<5.0 < 5.				< 5.0	< 5.0	68	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	16	30	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	25	2.0
MW-11	09/27/00	_	- -	-	-	-	-	-	-	-	-	-	-	-	-	_	-	_	-	-	_	-	-	_	_	-] -	_	20	4.5
MW-11 (DUP)	09/27/00	-	- -	-	-	-	-	-	-	-	-	-	_	-	-	-	- 1	-	-	-	-	-	-	_	_	-	-	_	18	2.0
MW-11*	09/27/00	-	- -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	_		-	-	-	6.2	2.1
MW-11	04/26/01	< 5.0	<5.0 < 5.				< 5.0	< 5.0	5.9	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	14	<0.20
MW-11 (DUP)	04/26/01	< 5.0	< 5.0 < 5.				< 5.0	< 5.0	6.2	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	12	<0.20
MW-11	07/25/01	< 5.0	<5.0 < 5				<50	<50	8.2	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	3.5	40.50
MW-11 (DUP)	07/25/01	< 5.0	<5.0 < 5				< 5.0	< 5.0	7.6	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	3.4	<0.50
MW-11	10/24/01	< 5.0	<50 <5				< 5.0	< 5.0	7.7	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	0.9	<0.50
MW-11	01/23/02	< 5.0	<50 < 5 <5.0 < 5				<5.0	< 5.0	< 50	< 5.0 < 5.0	< 5.0	<50 <50	< 50 < 5.0	< 5.0	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 10	1.2	40.50
MW-11(DUP) MW-11	01/23/02 05/09/02	< 5.0 < 5.0	<5.0 < 5		<50 <50		< 5.0 < 5.0	< 5.0	< 50 17	< 5.0	< 5.0 < 5.0	< 5.0	< 5.0	< 5.0 < 5.0	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 1 J	7 J, B	< 10 < 10	< 10	11	₹0.50
MW-11	05/09/02	< 5.0	<5.0 < 5		< 5.0		< 5.0	< 5.0	1 18	<50	< 5.0	< 5.0	<50	< 5.0	< 10	< 10	< 10	< 10	< 10	51	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10 < 10	1.8	<0.50
MW-11(DUP)	05/09/02	< 5.0	<50 <5		< 5.0		<5.0	< 5.0	15	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50 2.6	<0.50
MW-11*	08/07/02	< 5.0	< 5.0 < 5		< 5.0		< 5.0	< 5.0	7.4	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	4 J, B	< 10	< 10	0.56	₹0.50
MW-11	08/08/02	< 5.0	<5.0 < 5		< 5.0		< 5.0	< 5.0	36	< 5.0	<50	< 5.0	<5.0	<50	< 10	< 10	< 10	< 10	< 10	6.1	< 10	< 10	< 10	< 10	<10	2 J, B	< 10	< 10	0.55	₹0.50
	10,00,02		1 22 1 70										1			<u> </u>	<u> </u>			· · · · ·	·							,		

TABLE 3-1
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR DETECTED ORGANICS
MISSOURI ELECTRIC WORKS

Part Part								1,2-DCE	,	Bromo- dichloro-	Chloro-	Chloro-	Methylene					!			Bis(2-chloroethyl)	Butyl benzyl	2-Chloro-	N-Nitrosodi-n-	Diethyl	Dimethyl	D+n-butyl	Bis(2-ethylhexyl)			Aroclor 1260	Aroclor 1260
Marie Mari			1,1,1-TCA	$\overline{}$				Total						Toluene	Chloroform	Acetone			1,3-DCB	1,4-DCB										Phenoi	Unfiltered	Fittered
	Well ID										-		_																		8082 (µg/L)	8082 (µg/L)
							l	8	1 1							1 I		I							< 10				< 10	< 10	0.69	<0.50
Maria Mari							l	6	1 1									I	. 1						1	I i			1		√0.50	-
March 1000000 400 21 400 22 400 22 400 410 4							l									-		1	1 1		i l			1				1	1		◆ 0.50 0.59	0 20U
Marie Mari	1 '	02/05/03					l e	1	1 1														< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	_
Marita M	1						l e	I .								1 1						i i	ı			1		ľ	1	1 1	0.56	_
Maria 100,000 40	1						l e	I .	1 1									1					ı		l .	I .			1		1 0 0.31J	<0.50 _
Mari Mari							l e	1	1				< 5.0										ı		1	1		1	I		0.39J	<0.50
March Marc									1 .																	1		4	1	1 1	<050	-
Mail 1117/700 20 22 24 24 24 25 25 25 25	I							•	1 1						l	, ,							4	I .		1			1		0.24J 0.55	-
MarillA 007200 C. 50. 50. 50. 50. 50. 50. 50. 50. 50. 50															l			l .						í .		1			ľ		<0.25	<0.50 _
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	MW-14	12/11/02	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 50	< 5.0	74	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	1	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10	< 10	< 10		40.50	
- L MANTA I DEMORTS I AND LANDIAND AND LANDIAND I AND LANDIAND LANDIAND LANDIAND LANDIAND LANDIAND AND LANDIA		II .					•					,						< 10 < 10	1				1			l .		I			<0.50	-
MW-14 05/06/03 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5	1	1																			E I							I	1		<0.25 <0.50	_

TABLE 3-1
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR DETECTED ORGANICS
MISSOURI ELECTRIC WORKS

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						1,2-DC	e.	Bromo- dichloro-	Chloro-	Chloro-	Methylene								Bls(2-chloroethyl)	Butyl benzyl	2-Chloro-	N-Nitirosodi-n-	Diethyl	Dimethyl	DI-n-butyl	Bis(2-ethylinexyl)			Aroctor 1260	Aroclor 1260
	Compound	1,1,1-TCA	TCE PO	Œ 1,1-DC	A 1,1-D			methane		methane		Toluene	Chloroform	Acetone	1,2,4-TCB	1,2-DCB	1,3-DCB	1,4-DCB	ether	phthalate	phenol	propylamine	Phthalate	Phthaiate	phthalate	phthalate	Naphthalene	Phenol	Unfiltered	Filtered
	Method	8260B	82608 826	OB 8260	8260	B 82608	8260B	82608	8260B	82608	82608	82608	8260B	82608	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8082	8082
Well ID	Sample Date	(ha\r)	(HQ/L) (HQ					(µg/L)	(µg/L)	(hâ\r)	(µg/L)	(hG/r)	(µg/L)	(µg/L)	(hā\r)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(hB\r)	(hB\r)	(µg/L)	(µg/L)	(µg/L)	(h@/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-14	10/28/03	< 5.0	< 5.0 < 5				< 5.0	< 5.0 < 5.0	4.5 J 6.0	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0	< 5.0	2.0 J	1.8 J	17J	3.6.1	< 10	< 10	< 10	< 10	< 10	< 10	< 10	3.0 J, B	< 10	< 10	<0.50	-
MW-14 MW-14	02/03/04 05/18/04	< 5.0 < 5.0		i.0 4.1.			< 5.0 < 5.0	<5.0	47J	< 5.0 < 5.0	< 5.0	<5.0	< 5.0 < 5.0	< 5.0 < 5.0	19J <10	16J <10	20 J 21 J	3.8 J 3.6 J	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	< 10	< 10	<0.50	-
MW-14	08/11/04	< 5.0		io 3.2	- 1	4	< 5.0	< 5.0	7.9	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	2.5 J	243	3.2.1	5.6 J	<10	<10	<10	< 10	< 10	< 10	< 10 < 10	24J <10	< 10 < 10	< 10 < 10	<025 <050	_
MW-14	11/16/04	< 5.0		.0 6.4	< 5.0	- 1	< 5.0	< 5.0	15	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	5.5 J	4.0 J	4.8 J	8.6 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	₹025	_
MW-15A	09/16/03	<50	< 5.0 < 5	5.0 < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	18J	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	₹0.50	
MW-15A(DUP)	09/16/03	< 5.0	1 1	5.0 < 5.0			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	1.9 J	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-15A	10/29/03	< 5.0		50 <50		1	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-15A	02/04/04	< 5.0 < 5.0	1 1	5.0 < 5.0 5.0 < 5.0			< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 10	< 10	40.50	- 1
MW-15A MW-15A	05/18/04 08/10/04	<50		50 < 50		4	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	11 <10	< 10 < 10	< 10 < 10	<0.25 <0.50	_
MW-15A	11/15/04	< 5.0	1 1	50 < 50		1	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	40.35	_
MW-15B	09/15/03	< 5.0	< 5.0 < 5	5.0 < 5.0) <5J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	√0.50	-
MW-15B	10/29/03	< 5.0		5.0 < 5.0			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-158	02/04/04	< 5.0		50 < 50			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	3.2 J, B	< 10	< 10	<0.50	-
MW-15B	05/18/04	< 5.0		5.0 < 50			< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0	< 5.0 < 5.0	< 50	<50	< 5.0	< 10 < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	21 J	32	< 10	< 10	<0.25	-
MW-15B MW-15B	08/10/04 11/16/04	< 50 < 5.0		5.0 < 5.0 5.0 < 5.0			< 5.0 < 5.0	< 5.0	<5.0	< 50 < 5.0	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	11 < 10	< 10	< 10	40.50	-
MW-16A	09/15/03	<5.0		5.0 < 50			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	<10	< 10	< 10 < 10	40.25 0.50	- -
MW-16A	10/29/03	< 5.0		50 < 50			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	<10	40.50	
MW-16A	02/04/04	< 5.0	< 5.0 < 5	5.0 < 5.0) < 5.i	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-16A	05/20/04	< 5.0		5.0 < 5.0				< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<025	-
MW-16A	08/12/04	< 5.0		50 < 50				< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-16A	11/17/04	< 5.0 < 5.0		5.0 < 5.0			< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0	< 5.0 < 5.0	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	40.25	
MW-16B MW-16B	09/16/03 10/29/03	< 5.0		5.0 < 5.0			< 5.0	<5.0	<5.0	< 5.0	< 5.0	<50	<50	< 5.0	< 10	< 10	< 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	<0.50 <0.50	_
MW-16B	02/04/04	< 5.0	1 1	5.0 14.			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	3.4 J, B	< 10	<10	40.50	_
MW-16B(DUP)	02/04/04	< 5.0	7.3 <	5.0 16.	1.2	J 2.5 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	20 J, B	< 10	< 10	<0.50	_
MW-16B	05/20/04	< 5.0	8.8 <	5.0 1.6	J < 5.	2.2 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	7 6 J, B	< 10	< 10	<0.25	-
MW-16B	08/12/04	< 5.0		5.0 1.7			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	6.3 J	< 10	< 10	<0.50	-
MW-16B	11/17/04	< 5.0		5.0 1.8			17J	< 5.0	< 5.0	< 5.0	< 5.0 < 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	21J	< 10	< 10	<0.25	
MW-16C MW-16C	09/15/03 10/29/03	< 5.0 < 5.0	1	5.0 6.5 5.0 4.8			< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	18J 22J	< 10 < 10	22J 33J	< 10 1.8 J	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	<0.50 <0.50	-
MW-16C(DUP)	10/29/03	< 5.0		50 44			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	<50	< 5.0	< 10	< 10	2.8 J	1.6 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10 < 10	√0.50 √0.50	_ [
MW-16C	02/04/04	< 5.0		5.0 4.7			< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	23 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	3.4 J, B	< 10	< 10	40.50	_
MW-16C	05/20/04	< 50	8.2 <	5.0 5.5	< 5.	10	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	2.0 J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	2.2 J, B	< 10	< 10	<0.25	-
MW-16C(DUP)	05/20/04	< 50		50 5.7			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	2.2 J	< 10	26 J	15J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	91 J, B	< 10	< 10	<0.25	-]
MW-16C	08/12/04	< 5.0		5.0 3.9			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	2.5 J	14J	< 10	< 10	< 10	< 10	< 10	< 10	< 10	2.5 J	< 10	< 10	<0.50	-
MW-16C(DUP) MW-16C	08/12/04 11/17/04	< 5.0 < 5.0		5.0 4.5 .			< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 10 < 10	19J 22J	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	17 < 10	< 10	< 10	<0.50	-
MW-16C(DUP)	11/17/04	< 5.0		50 49			< 5.0	< 5.0	291	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	<0.25 <0.25	_
MW-17A	09/15/03	< 5.0		5.0 < 5.0	_			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	40.50	
MW-17A	10/29/03	< 5.0		5.0 < 5.0		5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
MW-17A	02/04/04	< 5.0		50 < 5				< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	17J, B	< 10	< 10	<0.50	
MW-17A	05/18/04	< 5.0	<50 <					<50	< 5.0	< 50	< 5.0	<50	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	2.5 J	< 10	< 10	<0.25	-
MW-17A	08/10/04	< 5.0 < 5.0		5.0 < 5.0 5.0 < 5.0				< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 50 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 10	< 10	9.0 J	< 10	< 10	₹0.50	-
MW-17A MW-17B	09/15/03	< 5.0		5.0 < 5.				<50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	40.25 40.50	
MW-17B	10/29/03	<5.0	<50 <			L	1	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	40.50 40.50	_
MW-17B	02/04/04	< 5.0	< 5.0 <					<50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	8.1 J	< 10	< 10	< 10	4.9 J, B	< 10	< 10	-	_
MW-17B	05/18/04	< 5.0	< 5.0 <	5.0 < 5.	0 < 5.	0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	79 J	< 10	< 10	<0 25	-
MW-17B	08/10/04	< 5.0	< 5.0					< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	6.6 J	< 10	< 10	911	< 10	< 10	<0.50	-
MW-17B	11/17/04	<50	<50 <					< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.25	
MW-18 MW-18	09/16/03 10/29/03	< 50 < 5.0	< 5.0 < < 5.0 <					< 5.0 < 5.0	< 50 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0	< 5.0 < 5.0	< 50 < 5.0	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	3.6 J, B 4 J, B	< 10	< 10	₹0.50	-
MW-18	02/04/04	< 5.0	< 5.0 <					< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	<0.50 <0.50	_
MW-18	05/20/04	< 5.0	<50 <					< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	<10	< 10	< 10	√0.30 √0.25	
MW-18	08/10/04	<50	< 5.0 <		1		1	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	28 J	< 10	< 10	<0.50	_
MW-18	11/16/04	< 5.0	< 5.0 <	5.0 < 5.			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.25	
MW-20A	04/19/04	< 5.0		5.0 < 5.				< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	₹0.50	-
MW-20A	05/19/04	< 5.0		50 < 5.				<50	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.25	
MW-20A	08/11/04	< 50	< 5.0 <	50 < 5.	0 < 5	0 < 5.0	<5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	< 10	_<0.50	

TABLE 3-1
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR DETECTED ORGANICS
MISSOURI ELECTRIC WORKS

	 												· · · · · · · · · · · · · · · · · · ·										·			 				
			1 1	1		1.2-DCE.		Bromo- dichloro-	Chloro-	Chiloro-	Methylene								Bh/O chloro cab. D	D. 44 5	0.00		51-41-4		B) L 4	n. 10 . 11 . 1			Aroctor	Aroctor
	Compound	1,1,1-TCA	TCE PCE	1 1-DCA	1.1-DCE		Benzene		-	(Chloride	Toluene	Chloroform	Acetone	1,2,4-TCB	1,2-DCB	1,3-DCB	1,4-DCB	Bls(2-chloroethyl) ether	Butyl benzyl phthalate	2-Chloro- phenol	N-Nitrosodi-n- propylamine	Diethyl Phthaiate	Dirnethyl Phthalate	Di-n-butyl phthalate	Bis(2-ethylhexyl) phthalate	Naphthalene	Phenol	1260 Unfiltered	1260 Filtered
	Method		8260B 8260B			82608	82608	82608	82608	82608	82608	82608	82608	8260B	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C	8270C		<u> </u>				
Well ID	Sample Date	(µg/L)			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)			8270C (µg/L)	8270C	8270C	8270C	8082	8082
MW-20A	11/16/04	< 5.0	< 5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	(PG/L) < 10	(µg/L) < 10	(µg/L) < 10	< 10	(µg/L) < 10	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-208	04/19/04	<50	< 5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10	< 10	€0.25	- -
MW-208	05/19/04	<50	< 5.0 < 5.0	1	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 10	₹ 050	
MW-208(DUP)	05/19/04	<50	<5.0 <5.0	1	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50	<50	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10 < 10	◆0.25	ı –
MW-208	08/11/04	< 5.0	< 5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	4.6 J	< 10		<0.25	=
MW-208	11/16/04	< 5.0	< 5.0 < 50		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0		< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	<0.50	:
MW-20C	04/20/04	< 5.0	<5.0 <5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	14	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	<0.25 <0.50	
MW-20C	05/20/04	< 5.0	< 5.0 < 5.0	1	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10		ı –
MW-20C	08/12/04	< 5.0	<5.0 <50		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	<10	< 10	12	<10	< 10	€0.25	, -
MW-20C	11/17/04	< 5.0	<5.0 <50		< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	<50	< 5.0	<50	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	40.50	, –
MW-21A	04/20/04	< 5.0	<5.0 < 5.0		< 50	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	◆0.25 ◆0.50	
MW-21A	05/20/04	< 5.0	<5.0 < 5.0		< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	10 B	< 10	< 10	1	
MW-21A	08/09/04	< 5.0	<50 <50	l l	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	102	<10	<10	<0.25 <0.50	
MW-21A	11/15/04	< 5.0	<50 <50		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	√ 030 √ 025	ı -
MW-21B	04/20/04	< 5.0	<5.0 < 5.0		< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	950	_
MW-21B(DUP)	04/20/04	< 5.0	<5.0 <5.0	1	< 5.0	<50	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 10	< 10	<10	< 10	< 10	<10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	40.50	i –
MW-21B	05/20/04	<50	<50 <5.0		<50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	90 J, B	< 10	< 10	40.25	
MW-21B	08/09/04	<50	<50 <50		< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	411	< 10	< 10	40.50	
MW-21B	11/15/04	< 5.0	<50 <50		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	19	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	40.25	
SP-1	08/06/02						-	_				_			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	₹0.50	
SP-1	11/10/02	_	_ _		_		-	_	_	-	_	-	-	_	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	
SP-1	02/06/03	6.9	<5.0 <5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	3.1	< 5.0	< 5.0	< 50	< 5.0	< 5.0	_		_	_	_	_	_	_	_	_	_		_			-
SP-1	09/04/03	5.6	<5.0 <50	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 50	3.2 J	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	⊲ 0.50	_
SP-1	10/29/03	< 50	<5.0 <50	1	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	40.50	_
SP-1	02/05/04	71	< 5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	41 J	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	40.50	_
SP-1	05/20/04	7.3	<50 <50		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	6.7	<50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	< 10	< 10	< 10	< 10	< 10	<0.25	'
SP-1	08/12/04	6.7	< 5.0 < 5.0	< 5.0	< 5.0	< 5.0	<50	1.9 』	< 5.0	< 5.0	< 5.0	< 5.0	13	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	-
SP-1	11/18/04	5.3	<50 < 50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	12	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.25	. –
WSW-1	04/25/01	< 5.0	< 5.0 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	4020	
WSW-1	07/24/01	< 5.0	<50 < 5.0		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	€0 25	_
WSW-1	10/23/01	< 5.0	< 50 < 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	73 ==	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	
WSW-1	01/23/02	< 5.0	<5.0 <5.0	< 50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	120	< 10	< 10	<0.50	ı –
WSW-1	10/30/02	2 J	2J <5.0		2 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	3 J	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	_
WSW-1	08/13/03	< 5.0	451 1.31	8.7	443	< 5.0	<50	< 5.0	21 J	24 J	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<0.50	
WSW-1	10/27/03	< 5.0	331 <5.0	5.7	3.6 3	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	3.9 J	< 10	< 10	< 10	< 10	4 J	< 10	< 10	< 10	<0.50	
WSW-1-100"	12/18/03	< 5.0	18J <50		111	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	2.3 J	< 5.0	-	-	-	_	-	-	-	! –	_	-	-	_	-	_	-	, -
WSW-1-120	12/18/03	< 5.0	2J < 5.0		1.1	< 5.0	<50	< 5.0	< 5.0	´ <50	< 5.0	< 5.0	< 5.0	< 5.0	-	-	-	_	-	-	-	-	-	-	-	_	_	_	-	_
WSW-1-140*	12/18/03	< 5.0	3.7 3 < 5.0	4.5 J	1.8 J	< 50	<50	< 5.0	< 5.0	< 50	< 5.0	< 5.0	23 J	< 5.0	-	-	-	-	_	-	_	_	_	1 -	_	_		_	-	-
WSW-1	02/03/04	< 5.0	3.6 J < 5.0	•	2.5 J	<50	<50	< 5.0	27 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	443	< 10	< 10	< 10	< 10	< 10	10 J, B	< 10	< 10	<0.50	_
WSW-1	05/18/04	< 5.0	221 < 5.0		3.7 J	< 5.0	<50	< 5.0	1.8 J	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	3.6 J	< 10	< 10	< 10	< 10	< 10	10 J	< 10	< 10	<0.25	
WSW-1	08/09/04	48 J	21J <50	1	2.6 J	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	13	< 10	< 10	40.50	-
WSW-1	11/15/04	2.3 J	2.5 J < 5.0		3.6 J	< 5.0	<50	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	131	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	<10	€0 25	
L							•																				·			

Notes.

- 1-TCA = trichloroethane
- 2-TCE = trichloroethene
 3-PCE = tetrachtoroethane
- 4- DCA = dichloroethane
- 5- DCE = dichloroethene
- 6-TCB = trichlorobenzene
 7-DCB = dichlorobenzene
- 8- µg/L = micrograms per liter
- 9-<50= compound not detected at or above stated reporting limit
- 10- * = pre-purge sample
- 11- ** = Result not considered reliable laboratory communication reports that the result may be attributed to laboratory cleaning agents laboratory blank not available
- 12- (EPA S) = sample collected by EPA and analyzed by an independent laboratory (original data not available for review)
- 13- (DUP) = duplicate sample
- 14-MW-11A sampled on 06/22/00 = Laboratory report for this sample tagged as Matrix Spike/Matrix Spike Duplicate Results not considered reliable
- 15- J = compound not detected at quantitation limit
- 16-B = compound detected in associated blank (if sample concentration is greater than 10 X concentration detected in blank denoted with * and used in risk assessment)
- 17- "-" = not analyzed

TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

			<u> </u>														_							1					т				r · · · · ·		Γ –				
		oroethane	thane	gue	bane	enof	hemol	henol	lore	ō	9 2	90	halene		halene	-			nzkline			phenyl	hyfphenol		l phenyl	fanone	_				90								eue
		trachi	je og i	theore i	oropro	thyl pt	dorol	lorop	prophe	ophen	otoke	otolve	naphti	euc	napht	pheno or a		loue	lorobe	9 记录	o-2- nenol	cheny	3-met	arillae	pheny	-2-pen	oheno	<u>و</u>	lone	arberte.	1thyler	Đ.	9101	122	1232	1242	2 4 8	254	at Prace
		,2,2-19	1,1,2-Trick	-Dkchk	-Dichk	-Dime	.5-Trick	,6-Trici	-Dichk	-Dinitr	-Dinit	d d) Ploro	lexan	Aethyl	Aethyt	litroan	ll toph	-Dich	ll ll l	-Dinita	romoy	;hloro	A North	Chloro	Aethyt	4ethy4	litogii.	Iltroph	enapt	enapt	hrace	clor 1	Z Z	clor 1:	xlor 1	cor 1	Sor	ν <u>τ</u> (α)α
	Compound		<u> </u>	1.2	1,2	2.4	2.4	2.4	2,4	2,4	2,4	2,6	_ ×	<u>_</u>	- &	\$	Ž Z	- Ž	3,3	유	* E	4 p	4	4	4 €	4	- }	- 4 -	-4	_ <u>\$</u>	Ŏ V	¥	₹	. ¥	¥	₹	₹	₹ -	<u>\$</u>
Well ID	Method Sample Date	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L) (µg/L)
MW-3	06/20/00	< 5.0		< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10		< 10	< 25	< 25	< 10	< 10	< 10	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
MW-3 MW-3	04/25/01 07/26/01	< 5.0 < 5.0		< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 0.20 < 0.5	< 0.40 < 0.5	< 0.20 < 0.5	< 0.20 < 0.5	< 0.20 < 0.5		< 10 < 10
MW-3	10/24/01	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10		< 25	< 10	< 10	< 10	< 0.5		< 0.5	< 0.5			< 10
мw-з	01/23/02	< 5.0	< 5.0	< 5.0		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5			< 10
MW-3	05/08/02	< 5.0 < 5.0	< 5.0			< 10 < 10	< 25 < 25	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10		< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 0.5	< 0.5	< 0.5				< 10
MW-3 MW-3 (EPA S)	08/07/02 10/31/02	- 3.0	- 3.0	< 50 —	- 3.0	-	-	< 10 —			-	-		-	`-	-	-	-	-	-	-	_	_	`-		_		-	- 23		-	- 10	< 0.5	< 0.5	< 0.5 	< 0.5	< 0.5	< 0.5	< 10
MW-3	10/31/02	< 5.0	< 5.0			< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-3	02/05/03	< 5.0	< 5.0			< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10		< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5				< 10
MW-3 MW-3	05/06/03 08/14/03	< 5.0 < 5.0	< 5.0 < 5.0			< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10		< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10			< 0.50 < 0.50		< 0.50 ·		< 10 < 10
MW-3	10/28/03	< 5.0	1			< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10		< 25	< 10	< 10	< 10						< 0.50	
MW-3	02/03/04	< 5.0				< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10						< 0.50	
MW-3 MW-3	05/19/04 08/11/04	< 5.0 < 5.0				< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10		< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10						< 0.25 < 0.50	
MW-3	11/17/04	< 5.0				< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10						< 0.50	
MW-4	09/26/00	< 50	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	
MW-4	04/24/01	< 50				< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10			!!!	< 0.20		< 0.20	
MW-4 MW-4 (DUP)	07/25/01 10/25/01	< 5.0 < 5.0		1	ı	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5			< 10 < 10
MW-4	10/25/01	< 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5			< 10
MW-4	01/23/02	< 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5			< 10
MW-4 MW-4	05/08/02 08/07/02	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0		< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5			< 10 < 10
MW-4	10/31/02	< 5.0		< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10		< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5			< 10
MW-4 (EPA S)	10/31/02		-	-	_	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 1	-	-	-	-	-	-	-	-	-	-	-
MW-4	02/04/03	< 5.0			•			< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10		< 25	< 10	< 10	< 10	< 0.5					< 0.5	
MW-4 MW-4	05/06/03 08/12/03	< 5.0 < 5.0		< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10		< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10				< 0.50		< 0.50 < 0.50	
MW-4 (DUP)	10/28/03	< 5.0		< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10		< 25	< 10	< 10	< 10						< 0.50	
MW-4	10/28/03	< 5.0		< 5.0		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10		< 25	< 10	< 10	< 10						< 0.50	< 10
MW-4 (DUP)	02/03/04	< 5.0		< 5.0 < 5.0		< 10	< 25 < 25	< 10	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10		< 25 < 25	< 10 < 10	< 10 < 10	< 10					< 0.50		< 10
MW-4 MW-4	02/03/04 05/18/04	< 5.0 < 5.0	< 5.0	< 5.0	< 5.0 < 5.0		< 25		< 10								< 25			< 25	< 25	< 10						< 25	< 25			< 10 < 10	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.50 < 0.25	< 10
MW-4	08/11/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-4	11/16/04		< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-5 MW-5 *	06/20/00 09/27/00	< 5.0	< 5.0 -	< 5.0	< 5.0 	< 10	< 25 	< 10	< 10	< 25 -	< 10	< 10	< 10	< 10	- 10	- 10	< 25 -	< 10	< 10 -	< 25	< 25 -	< 10 -	< 10	< 10	< 10	< 10	< 10	< 25 -		< 10 -	< 10 -	< 10 —	< 10 	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	- 10
MW-5	09/27/00)						}) i	-			}] [))			< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	
MW-5	04/25/01			< 5.0					< 10				< 10	< 10	< 10	< 10					< 25		< 10		< 10					< 10		< 10	< 0.20	< 0.40	< 0 20	< 0.20	< 0.20	< 0.20	
MW-5	07/26/01	< 5.0		< 5.0			< 25	< 10	< 10 < 10		< 10	< 10	< 10 < 10		< 10	< 10	< 25	< 10	< 10 < 10	< 25 < 25	< 25	< 10	< 10	< 10	< 10 < 10	< 10	< 10 < 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 < 0.5	< 10
MW-5 MW-5	10/24/01 01/23/02	< 5.0 < 5.0		< 5.0 < 5.0			< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	 < 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 ·	
MW-5	05/08/02	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10						·	< 10
MW-5	08/07/02	< 5.0		< 5.0			< 25	< 10	< 10	< 25		< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-5 MW-5	11/01/02 02/05/03			< 5.0 < 5.0					< 10 < 10				< 10 < 10	< 10	< 10	< 10	< 25	< 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 25 < 25	< 25	< 10	< 10	< 10 < 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5 ·	< 10 ! < 10 !
MW-5	05/06/03	< 5.0		< 5.0			< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-5	08/14/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-5	10/28/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10		< 25		< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 ·	< 10
MW-5	02/03/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	<u> </u>	< 10	< 25	< 10	< 10	\ IU	<u> </u>	1 < 10	[< 10	< 25	_ <u> </u>	L < 10	 < 25	< 25	< 10	1 < 10	L < 10	<u> </u>	< 10	< 10	<u> </u>	<u> </u>	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< U.5U	0.50	5 10

TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

	1		1					T						. 1										5			_	г—-	Γ	_	Г	r	1	Γ		
	Compound Method	Benzo(a)pyrane	Berzo(b)fluoranthene	Benzo(g,h,i)perytene	Benzo(k)fluoranthene	Bis(2- chloroethoxy)methane	Bis (2- chlorolsopropyi) ether	Bromoform	Bromomethane	Carbazole	Carbon tetrachloride	Chloroethane	Chrysene	cls-1,3-Dichloropropene	Dibenz(a,h)anthracene	Dibenzofuran	Dibromochloromethane	DI-n-octyl phthalate	Ethylberzene	Fluoranthene	Fluorene	Hexachlorobenzene	Hexachlorobutadiene	Hexachlorocyclopentac ene	Hexachloroethane	Indeno(1,2,3-cd)pyrene	bophorone	Nifrobenzene	N-Nitrosodiphenylamine	Pentachlorophenol	Phenanthrene	Ругепе	Styrene	trans-1,3- Dichloropropene	Vinyl chloride	Xylenes, Total
Well ID	Sample Date	(µg/L)	(uo/L)	(µg/L)	(µg/L)	(ug/L)	(ua/L)	(µg/L)	(ua/L)	(ua/L)	(ug/L)	(µg/L)	(ua/L)	(ua/L)	(ua/L)	(ua/L)	(µg/L)	(ua/L)	(ug/L)	(µg/L)	(ua/L)	(µg/L)	(ua/L)	(ug/L)	(µg/L)	lua/IX	(µg/L)	(µg/L)	(ua/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	lua/N	(µg/L)
MW-3	06/20/00	< 10	< 10	< 10	< 10	< 10	< 10	••		< 10	7E 811		< 10		< 10	< 10	<5.00			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	(P9/-C/	109/-/	(P9/-/	(P9/-/
MW-3	04/25/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-3	07/26/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
MW-3	10/24/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-3	01/23/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		
MW-3	05/08/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0		< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	i I	
MW-3	08/07/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-3 (EPA S)	10/31/02	< 10	- < 10	< 10	< 10	- < 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	- < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	- 25	< 10	< 10	-50	- 50	-50	
E-WM	10/31/02 02/05/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25 < 25	< 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	
MW-3	05/06/03	< 10		< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	< 5.0	< 5.0	
MW-3	08/14/03	< 10		< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 50	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	< 5.0	< 5.0	
MW-3	10/28/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10		< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-3	02/03/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-3	05/19/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0		< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
MW-3	08/11/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10	l	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
MW-3	11/17/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10		< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-4	09/26/00	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10 < 10	< 5.0	< 5.0	< 10 < 10	< 5.0 < 5.0	< 10	l	<5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	1	< 5.0	
MW-4 MW-4	04/24/01 07/25/01	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 5.0	< 10 < 10		< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 25 < 25	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0		
MW-4 (DUP)	10/25/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10		< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0 < 5.0	< 5.0	< 5.0
MW-4	10/25/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 50	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-4	01/23/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
MW-4	05/08/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		
MW-4	08/07/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	< 50	< 5.0	< 5.0
MW-4	10/31/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-4 (EPA S)	10/31/02	-	-	-	-		 	-			l - .			_	_		l	-		-		l -	-	-	-	_	-		-	-	_	-	-	-	-	-
MW-4	02/04/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0		< 10	< 5.0	< 10	< 10			< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10		< 5.0	< 5.0		
MW-4	05/06/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	1	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-4	08/12/03	< 10	< 10	< 10	< 10 < 10	< 10	< 10 < 10	< 5.0	< 5.0	< 10 < 10	< 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0	< 10	< 10 < 10	< 5.0 < 5.0		< 5.0	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 25	< 10		< 5.0	< 5.0		< 5.0
MW-4 (DUP) MW-4	10/28/03	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0		< 5.0 < 5.0	< 5.0	< 10	< 5.0 < 5.0	< 10 < 10	< 10	•	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0		< 5.0 < 5.0
MW-4 (DUP)	02/03/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0		1	< 5.0
MW-4	02/03/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0			< 5.0	< 5.0	< 10	< 5.0	< 10	< 10			< 50		< 10	L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	1	1	< 5.0		< 5.0
MW-4	05/18/04	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-4	08/11/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-4	11/16/04	< 10			< 10		< 10	<50	<50	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10			< 5.0	
MW-5	06/20/00	< 10	< 10	< 10	< 10	< 10	< 10			< 10		< 5.0	< 10	< 5.0	< 10		1	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-5 *	09/27/00	-	-	-	[-	-	-	-	-	-	-	-	-	-	_	_	-	-	-	-	-	-	-	~	-		-	-	-	-		-	-	-	-	-
MW-5	09/27/00				1	-10	-10			- 10		1		 			-50	10		10	-10								-30		-10					
MW-5	04/25/01	< 10 < 10			< 10 < 10	210	< 10	< 5.0	250	210	25.0	< 5.0 < 5.0	> 10	> 5.0	> 10	210	< 5.0	> 10	< 5.U	> 10	> 10	< 10	\ \ \ 10	< 10	< 10 < 10	< 10	< 10	< 10		< 25 < 25	< 10 < 10				< 5.0 < 5.0	
MW-5 MW-5	07/26/01 10/24/01	< 10			< 10				< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	210	< 10	210	\ \ 10	< 10	< 10			< 25	< 10	< 10	< 5.0		< 5.0	
MW-5	01/23/02				< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25					< 5.0	
MW-5	05/08/02			l < 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10						< 5.0	
MW-5	08/07/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-5	11/01/02	< 10	 < 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 50
MW-5	02/05/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-5	05/06/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25					< 5.0	
MW-5	08/14/03				< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-5	10/28/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0 - 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10 < 10	< 10	< 5.0	< 50	< 5.0	< 5.0
MW-5	02/03/04	< 10	<u> </u>	< 10	< 10	1 < 10	T < 10	1 < 5.0	1 < 5.0	<u> < 10</u>	<u> < 5.0</u>	< 5.0	<u> </u>	<u> </u>	L > 10	1 < 10	1 > 5.0	<u> </u>	< 5.0	<u> </u>	<u> </u>	1 < 10	1 < 10	L < 10	L > 10	_ > 10	L > 10	L > 10	1 < 10	_ \ 25_	10	1 < 10	< 5.0	<u> 500</u>	< 5.0	< 5.0

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TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

	Compound Method	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,2-Dichloroethane	1,2-Dichloropropane	2,4-Dimethyl phenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2.4-Dichlorophenol	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotokuene	2-Chloronaphthalene	2-Нехаполе	2-Methylnaphthalene	2-Methytphenol	2-Nitrogniline	2-Nitrophenol	3,3'-Dichlorobenzidine	3-Nifrognitine	4.6-Dinitro-2- methylphenol	4-Bromophenyl phenyl ether	4-Chloro-3-methylphenol	4-Chlorogniline	4-Chlorophenyl phenyl either	4-Methyl-2-pentanone	4-Methylphenol	4-Nitroaniine	4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Aroclor 1016	Arocior 1221	Arocior 1232	Aroclor 1242	Aroclor 1248	Arocior 1254	Benz(a)anthracene
Well ID	Sample Date	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-5	05/19/04	< 5.0			< 5.0	< 10	< 25	< 10		< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.25	< 0.25					< 10
MW-5 MW-5	08/11/04 11/17/04	< 5.0 < 5.0		< 5.0 < 5.0		< 10 < 10	< 25 < 25	< 10	< 10	< 25 < 25	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10	< 10	< 10	< 0.50 < 0.50			< 0.50 < 0.50			< 10
MW-6A	06/19/00	< 5.0				< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	> 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10 < 10	< 10 < 10	< 10 < 10	< 1.0	< 0.50 < 2.0					< 10
MW-6A	04/24/01	< 5.0				< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.20			< 0.20			< 10
MW-6A	07/25/01	< 5.0	< 5.0			< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-6A	10/24/01	< 5.0				< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5			< 10
MW-6A	01/22/02	< 5.0		1		< 10	< 25	< 10	< 10 < 10	< 25 < 25	< 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5			< 10
MW-6A MW-6A	10/30/02 08/12/03	< 5.0 < 5.0			< 5.0 < 5.0	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 25	< 10 < 10	< 10	< 10	< 10	< 10	< 10 < 10	< 25	< 10	< 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 0.5 < 0.50	< 0.5 < 0.50	< 0.5 < 0.50	< 0.5 < 0.50			< 10 < 10
MW-6A	05/18/04	< 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10					4		< 10
MW-7	06/20/00	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 1.0	< 2.0					< 10
MW-7	04/25/01	< 5.0			< 5.0	< 10		< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.20	< 0.40	< 0.20	< 0:20	< 0.20		< 10
MW-7	07/26/01	< 5.0				< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5			< 10
MW-7	10/25/01	< 5.0 < 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 25 < 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5		< 0.5		1	< 10
MW-7 (DUP) MW-7	01/23/02 05/07/02	< 5.0			< 5.0 < 5.0	< 10 < 10	< 25 < 25	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	I		< 10 < 10
MW-7	08/07/02	< 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 10
MW-7	10/31/02	< 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5				< 10
MW-7	02/05/03	< 5.0		< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5			< 10
MW-7	05/05/03	< 5.0		1	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50			< 0.50	< 0.50	< 10
MW-7	08/13/03	< 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50						< 10
MW-7	10/29/03	< 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10				< 0.50			< 10
MW-7 MW-7	02/04/04 05/20/04	< 5.0 < 5.0			< 5.0 < 5.0	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10	< 10	< 10	< 0.50 < 0.25			< 0.25		< 0.50	< 10 < 10
MW-7	08/11/04	< 5.0	1	1	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10 < 10	< 10 < 10	< 10	1 1			< 0.50	1	< 0.50	< 10
MW-7	11/16/04	< 5.0		1	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50		< 0.50				< 10
MW-8	09/26/00	< 5.0		+	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10		< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 1.0			_			< 10
MW-9	06/19/00	< 5.0				< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 1.0	< 2.0	< 1.0	< 1.0		< 1.0	< 10
MW-9	04/24/01	< 5.0		1	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.20	_	1 1	< 0.20	1	1	< 10
MW-9	07/24/01	< 5.0			1	< 10		,	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5			< 10
MW-9	10/24/01	< 5.0 < 5.0			< 5.0 < 5.0	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5			< 10 < 10
MW-9 MW-9	01/22/02 10/30/02	< 5.0				< 10				< 25	< 10	< 10		< 10	1	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10 < 10		< 10		< 10	< 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5				< 10
MW-9	08/12/03	< 5.0	< 50	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-9	05/18/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.25	< 0.25	< 0.25	< 0 25	< 0.25	< 0.25	< 10
MW-10	06/20/00	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
MW-10	04/24/01	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25				< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.20	< 0.40	< 0.20	< 0.20	< 0.20	< 0.20	< 10
MW-10	07/24/01			< 5.0 < 5.0				< 10						< 10 < 10	< 10 < 10	< 10 < 10	< 25	< 10	< 10 < 10	< 25	< 25		< 10	< 10	< 10	< 10 < 10	< 10						< 0.5						
MW-10 MW-10	10/25/01 01/22/02	< 5.0 < 5.0		< 5.0				1 < 10	< 10	< 25			< 10		\ 10 < 10	< 10	< 25	< 10	< 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10		\ 10 < 10	< 10			< 25 < 25	< 10	< 10 < 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	`		< 10
MW-10	05/08/02			< 5.0					< 10						< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 10		< 25	< 25	< 10	< 10		< 0.5				< 0.5		
MW-10	08/07/02	< 50		< 50			< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25			< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5						
MW-10	10/31/02	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-10	02/04/03		< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-10	05/06/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10 < 10	< 10	< 10		< 25	< 25	< 10			< 0.50						
MW-10	08/12/03						< 25				< 10	< 10	< 10 < 10	< 10 - 10	< 10	1 < 10	< 25	< 10	< 10	< 25 ~ 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		
MW-10 MW-10	10/27/03 02/02/04	< 5.0 < 5.0	25.0	25.0	25.0	210	< 25 < 25	210	210	< 25	210	210	< 10	210	210	210	225	< 10 < 10	< 10	< 25 < 25	< 25	> 10 > 10	210	< 10 < 10	210	< 10	> 10 < 10	225	225	< 10 - 10	< 10 l	< 10	< 0.50	< U EV	< n eu	- O 50	-0.50		< 10
MW-10	05/18/04		< 5.0	<50	< 5.0	1 < 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	1 < 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	\ \ \ 10	< 0.25	< 0.50	< 0.30	< 0.30	< 0.25	< 0.25	< 10
MW-10 (DUP)	05/18/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 10
MW-10	08/09/04	< 5.0	< 50	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10

TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

					т	Υ	т			_												Υ					T	1								
			ене	g.	67.0	thane	₽				ride			euedo	эсөиө		ethane	₽			<u> </u>	2	lene	oentad		yrene	 		amine	5		İ		!		
		919	rant	zo(g,h,i)penyle	g aft) (2)	py/Je		ane		achlo	æ		oropri	anthra	_	Į ž	thak	0	6		92196) of or	λοιοί	than) ig	İ		ğe ş	phen	p			2	en en	_
		Pyd (c)fluc	J.h.ilg	<u>8</u>	Š	8	Ę	ne th	e	tetro	# #	ø	,3-Dichi	ız(a,h)antt	ofura	ᄫ	tyl phiti	USBL	then		l g	l do	loroc	loroe loroe	1,2,3	g g	, E	8	ρ	threr			~ g	ortde	δ
1) OZC	ZO(t) 02) 220 130 130	8 5	\$ ½	, Š) E	<u>I</u> paz	- Poq	poro	336	된)Zuex) ž	ě	noctyl	g P	oran	Ē	g C	X dc	kach 9	gch) E	Ĕ	₹ P) §	lac!	e da	e e	9119	1-5-1-1.	yl chlor	8 8
	Compound Method	į į	8	₫	<u>\$</u>	Character 2	₩ <u>₽</u>	<u>&</u>	<u>&</u>	<u>8</u>	8	_ნ	<u>5</u>	49	<u> </u>	<u> </u>	<u> </u>	급	₤	_₹	_≞_	<u> </u>	<u>Ē</u>	T 0	- Đ	_₹_	_₹	불	ź	Pe	<u>₹</u>	3_	Styr	[출음	<u> </u>	<u>*</u>
Well ID	Sample Date	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)) (µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µq/L)	(µg/L)	(µg/L)	(µa/L)	(µg/L)	(µg/L)	(µa/L)	(ua/L)	(ua/L)	(ua/L)	(µg/L)	(µa/L)	(µg/L)
MW-5	05/19/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-5 MW-5	08/11/04 11/17/04	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-6A	06/19/00	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-6A	04/24/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0		< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-6A MW-6A	07/25/01 10/24/01	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 5.0 < 5.0		< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-6A	01/22/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0		< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10 < 10	< 5.0 < 5.0	< 5.0	< 5.0	< 5.0
MW-6A	10/30/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 50		< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	< 5.0	< 5.0	< 5.0
MW-6A	08/12/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0 < 5.0	< 10 < 10	< 10	< 50	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-6A MW-7	05/18/04 06/20/00	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0	< 10	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10	< 10	< 10	< 10 < 10	< 10 < 10	< 10	< 10	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-7	04/25/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-7	07/26/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10 < 10	< 5.0	< 5.0	< 10	< 5.0	< 10 < 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-7 MW-7 (DUP)	10/25/01 01/23/02	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-7	05/07/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-7	08/07/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-7 MW-7	10/31/02 02/05/03	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-7	05/05/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0		< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-7	08/13/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-7 MW-7	10/29/03 02/04/04	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-7	05/20/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-7	08/11/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 50	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-7 MW-8	11/16/04 09/26/00	< 10	< 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 50 < 50	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10	< 10	< 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-9	06/19/00	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 50	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10			< 5.0	< 5.0
MW-9	04/24/01	< 10	ı	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0		< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	< 5.0	< 5.0	< 5.0
MW-9	07/24/01	< 10 < 10	< 10	< 10	< 10	< 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 5.0 < 5.0	< 10 < 10	< 10	< 5.0 < 5.0	< 10 < 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-9 MW-9	10/24/01 01/22/02	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10 < 10	< 5.0	< 10	< 10 < 10	< 5.0	< 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-9	10/30/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-9	08/12/03	< 10	< 10 < 10	< 10		< 10 < 10		< 5.0 < 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10		< 10	< 5.0	< 10	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10		< 5.0	< 5.0	< 5.0
MW-9 MW-10	05/18/04 06/20/00	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10			< 5.0 < 5.0		
MW-10	04/24/01	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 50	< 10	< 5.0	< 50	< 10	< 5.0	l < 10	< 10	< 50	< 10	< 50	l < 1∩	< 10	l < 1∩	< 10	< 10	< 10	l < 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-10	07/24/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 50	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-10 MW-10	10/25/01 01/22/02		< 10 < 10		< 10	< 10 < 10	< 10	< 5.0	< 5.0	< 10	< 5.0 < 5.0	< 5.0	< 10	< 5.0 < 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 25 < 25	< 10	< 10 < 10	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-10	05/08/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10 < 10 < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-10	08/07/02	< 10	l < 10	< 10	I < 10	I < 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	l < 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-10 MW-10	10/31/02 02/04/03	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0	< 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 5.0	< 10 < 10	< 10 < 10	< 10	< 10 < 10 < 10	< 10 < 10	< 10	< 10	< 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-10	05/06/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	< 5.0	< 5.0	< 5.0
MW-10	08/12/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-10	10/27/03 02/02/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0 < 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10 < 10 < 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 25 < 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-10 MW-10	02/02/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0 < 5.0
MW-10 (DUP)	05/18/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	< 5.0	< 5.0	< 5.0 < 5.0 < 5.0
MW-10	08/09/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0

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TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

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		- F	g g	ള	8	٥	\$	<u>8</u>	<u> </u>	_	اه		툙		ğ				뒳			ğ	훁		ğ	巓					ایا								8
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		ğ	호	ğ	ğ	ξ	ğ	ğ	ğ	ğ	훃ㅣ	횽	ᄝ	욷	ᅙ	룶	툍	₩	8	Ē	상활	를		E .	~	. ⁴	용	2	8		F	92	1016	ā	232	1242	1248	1254	量
]		5 1	ĪĠ	훙	호	<u>E</u>	亨	뒫	호	튵	퉅	튙	8	ğ	ŧ	Ē	8	ᅙ	友	8	풀 호	ğ _	<u> </u>	8	₹.	₹	₹	D O	형	ğ	ğ) g	5	2	5	5	مر ب	<u>6</u>	8
	Compound	1,2	1,2-	2. D	2	4	₹,	4,	- 4	4	₹	å l	₹∣	흊	Ž	\$		토	. ^{6,}	卓	상 툍	8 ₹	₹	ਹ ਨੂੰ	₽₽	\$	\$	幸		9	8	튵	8	8	8	8	δ	20)Zue
	Compound Method	┝╧┤	`		-	-4-	-4	2	-2		-7-	-7	~	~	-7	~~	-7-	-6-	<u> </u>		4.5	4 0	-4	-4-	4.0	4		- 4	4		-		-	- <		 	<_	_ <	
Well ID	Sample Date	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-10 (DUP)	08/09/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10			< 0.50		< 0.50			+
MW-10(DUP)	11/16/04	< 5.0	< 5.0	< 5.0		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25		< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50			< 0.50			1 1
MW-10	11/16/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	$\overline{}$	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-11	06/22/00	< 5.0	< 5.0	< 5.0 < 5.0	< 5.0	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10	< 10 < 10	< 10	< 1.0 l < 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
MW-11(DUP) MW-11	06/22/00 09/27/00	< 5.0	3.0	\ 3.0	\ 3.0	10	\2	\ <u>\ </u>	\ <u></u>		- 10				- 10	`			- 10	1 2	١	`'	`	`	\ <u>.</u>	\ \ <u>-</u> -'	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\23	`'		` 10	`	> 1.0		< 1.0 < 1.0		< 1.0 < 1.0	< 1.0 < 1.0	
MW-11	09/27/00	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.20			< 0 20			< 10
MW-11 (D)	09/27/00	< 5.0	< 5.0	< 5.0		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.20		< 0.20	1 1	< 0.20	i	
MW-11	04/26/01	< 5.0	< 5.0			< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.20		< 0.20				
MW-11 (D)	04/26/01	< 5.0	< 5.0			< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10			< 0.20				< 10
MW-11	07/25/01	< 50	< 5.0	< 5.0		< 10	< 25	< 10	< 10	< 25 < 25	< 10	< 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10	< 10	< 25 < 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-11 (D) MW-11	07/25/01 10/24/01	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 25	< 10 < 10	< 10 < 10	< 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 0.5 < 0.5	< 0.5 < 0.5		< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 10 < 10
MW-11	01/23/02	< 5.0	< 5.0	< 5.0		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-11 (DUP)	01/23/02	< 5.0	< 5.0	< 5.0		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 10
MW-11	05/09/02	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-11P	05/09/02	< 5.0				< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	< 10
MW-11 (DUP)	05/09/02	< 5.0	< 5.0			< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-11	08/07/02	< 5.0	< 5.0	< 5.0		< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-11P MW-11P (DUP)	08/08/02 08/08/02	< 5.0 < 5.0	< 5.0 < 5.0			< 10 < 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10 < 10	< 10 < 10	< 0.5 < 0.5	< 0.5 < 0.5		< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	
MW-11	10/31/02	< 5.0	< 5.0	< 5.0		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-11 (EPA S)	10/31/2002	_	_	_	-	_		-	-	-	- I	-		- 1	-	-	-	-	-	-	-	-	-	-	_	-	-	_	-		_		-	_	_	-	_	_	-
MW-11D(DUP)	10/31/02	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	<05	< 0.5	< 10
MW-11	02/05/03	< 5.0	< 50	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-11	05/06/03	< 5.0	< 5.0	< 5.0	1	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50			< 0.50		
MW-11	08/13/03 09/14/03	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 0.50 < 0.50		< 0.50 < 0.50		< 0.50 < 0.50		
MW-11	10/28/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10			< 0.50	, ,	< 0.50	i	1 1
MW-11	02/03/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10			, ,	< 0.50			1
MW-11	05/19/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 10
MW-11	08/11/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	, ,	< 0.50	< 0.50		< 0.50		
MW-11	11/17/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50		< 0.50	< 10
MW-11A MW-11A	06/22/00 09/27/00	< 5.0	< 5.0	< 5.0	< 5.0			<u> </u>						< 10								:				< 10		 					< 1.0 < 1.0	< 2.0 < 2.0			< 1.0	< 1.0	=
MW-11A	09/28/00	< 5.0	< 5.0	< 5.0	< 5.0									< 10												< 10							< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	l l
MW-11A	09/29/00	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	 < 25 	< 10	< 10	< 10	< 10	< 10	< 10	< 25	- 10	- 10	< 25	- 25	امدرا	- 10	ا ۱۵ ا	- 10	_ 10 l	- 10	1 - 25	اعدا	- 10	< 10	< 10	< 1.0	< 2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 10
MW-11A	04/25/01	< 5.0	< 5.0	< 5.0	< 5.0	< 10	l < 25	l < 10 i	l < 10	l < 25 l	< 10 l	< 10 l	< 10	< 10	< 10	l < 10 l	l < 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10 < 10 < 10 < 10 < 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.20	< 0.40	< 0.20	< 0.20	< 0.20	< 0.20	< 10
MW-11A	07/26/01	< 5.0	< 5.0	<50	< 5.0	< 10	< 25	< 10	< 10	< 25 < 25	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-11A	10/24/01	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-11A	01/24/02	< 5.0	< 5.0	< 5.0	< 5.0 < 5.0	< 10	< 25 < 25	< 10 < 10	< 10 < 10	25	> 10	< 10 < 10	> 10	> 10	< 10	< 10 < 10	25	< 10 < 10	< 10	< 25	< 25	< 0	< 10	\	< 10	< 10	< 10 < 10	25	25	< 10	< 10	< 10	< 0.5 < 0.5	< 0.5	< U.5	< 0.5	< 0.5	< 0.5	< 10
MW-11A MW-11A	05/09/02 08/08/02	< 5.0 < 5.0	< 5.0	<50	< 5.0	< 10	< 25	< 10	< 10	< 25 < 25 < 25 < 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25														\ 10 < 10	< 10	< 0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	< 10
MW-11A	11/01/02	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10 l	< 10 I	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10 < 10 < 10 < 10 < 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-11A	02/04/03	1	1	1	1	- 10	- 05	< 10	< 10	< 25 < 25	< 10 < 10	< 10 < 10	- 10 l	< 10 <10	< 10	< 10 < 10	< 25 < 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	1 - 10 1	1 - 10	اممدا	اعمدا	اعمدا	اممدا	-05	-0.5	1 - 10
MW-11A	05/06/03	<5.0	<5.0	<5.0	<5.0	<10	<25	<10	<5.0	<25	<10	<10	<10	<10	<10	<10	<25	<10	<10	<25	<25	<10	<10	<10	<10	<10	<10	<25	<25	<10	<10	<10	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	< 10 <10 < 10 < 10 < 10 < 10 < 10 < 10 <
MW-11A	09/04/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-11A	10/29/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-11A	02/03/04	\ \ 5.0	< 5.0	<50 -50	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50 < 0.55	< 0.50	< 0.50 < 0.00	< 0.50	< 0.50	< 0.50	< 10
MW-11A MW-11A	05/18/04 08/10/04	25.0	250	250	< 5.0	< 10	225	< 10	210	< 25	< 10	< 10	< 10	< 10	< 10	\ 10 < 10	< 25	< 10	< 10	225	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	25	< 10	< 10 < 10	< 10	< 0.23	< 0.25	< 0.23	< 0.23	< 0.25	< 0.25	\ 10 < 10
MW-11A	11/16/04	<50	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
1444-1174	1.710/04	1 - 0.0	1 - 0.0	1 -0.0	0.0	- 10		·	<u> </u>											20	- 20	لتنيا		كنب		ت.				- 10			<u> </u>	0.00	. 0.00	- 0.00	- 5.55	- 5.50	لخنب

TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

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		9	鱼	g,h,l)	<u> </u>	≰	ੈ	5	i je	象	횬	∯	횬	Dic.	(g)	Ş	8	₹.	822	를 I	g.	Ş	ğ	Ş	ğ	0(1.2.3	ğ	20	8	호	ŧ.		_	-Spring	\$	유
)ozi)oz	02)ozı	ا ٰہ ق	ا جُ ا	8	횥	8	ξ	<u>8</u>	8	<u>ن</u> ف	917	22	ρ	ğ	👸	호	Đ	g	g	50.	g	8	ğ	중	. ∕ ₹	ţ	ב ב	2	8	1. o	₹	Ĕ
	Compound	Ber	Ber	Ber	.	8 5	<u> </u>	န္တ	ဋ	8	8	ਰ	ਹੈ	ŧ	윰	<u>8</u>	욥	늄	Effr	Ę	_		Đ.	Hey	Ŷ	Ž	Š	툳	ż	Per	문	ځ	S t	혈	٤	. ₹
	Method																																			
Weil ID	Sample Date	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	1,, 2	(µg/L)			(µg/L)	(µg/L)			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(h6\r)	(µg/L)		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-10 (DUP)	08/09/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0			< 5.0
MW-10(DUP)	11/16/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-10	11/16/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0			< 5.0
MW-11 MW-11(DUP)	06/22/00 06/22/00	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0	< 10	< 5.0 < 5.0	< 5.0	< 10	< 5.0	< 10	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 5.0			< 5.0
MW-11	09/27/00	`			`'	`'	`	\	`			3.0			- 10	- 10	\ J.U		3.0	`'	- 10		`		`	- 10		\ 10		\\		< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-11	09/27/00	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	<8	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-11 (D)	09/27/00	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 9	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0			< 5.0
MW-11	04/26/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-11 (D)	04/26/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-11	07/25/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-11 (D)	07/25/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-11	10/24/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-11	01/23/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 50	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0			< 5.0
MW-11 (DUP)	01/23/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-11	05/09/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-11P	05/09/02 05/09/02	< 10	< 10	< 10 < 10	< 10	< 10	< 10 < 10	< 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 5.0 < 5.0	< 10 < 10	< 10	< 5.0	< 10	< 5.0	< 10 < 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 10 < 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-11 (DUP) MW-11	08/07/02	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 10	< 5.0 < 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-11P	08/08/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	1	< 5.0
MW-11P (DUP)	08/08/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-11	10/31/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-11 (EPA S)	10/31/2002	_	l –				_	-		_	_	-	_	l	-	_		_		-	_		_	-		-	-	_	_	_	-	-		-	_	_
MW-11D(DUP)	10/31/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-11	02/05/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-11	05/06/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-11	08/13/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-11	09/14/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0			< 5.0
MW-11	10/28/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0			< 5.0
MW-11	02/03/04 05/19/04	< 10 < 10	< 10 < 10	< 10	< 10	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 5.0	< 10 < 10	< 5.0	< 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-11 MW-11	08/11/04	< 10	< 10	< 10 < 10	< 10 < 10	< 10	1	< 5.0		< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0 < 5.0	< 10	< 5.0 < 5.0	< 10 < 10	< 10	< 10	< 10 < 10	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0		< 5.0 < 5.0
MW-11	11/17/04	< 10	< 10	< 10	< 10	< 10	1	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-11A	06/22/00						1	< 5.0			< 5.0	< 5.0		< 5.0			< 5.0		< 5.0											-20			< 5.0			< 5.0
MW-11A	09/27/00						\																													
MW-11A	09/28/00							< 5.0	< 5.0		< 5.0	< 5.0		< 5.0			< 5.0		< 5.0		••												< 5.0	< 5.0	< 5.0	< 5.0
MW-11A	09/29/00	< 10	< 10	< 10		< 10		< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10		< 10	< 10	< 10	< 10	< 25			< 5.0	< 5.0	< 5.0	< 5.0
MW-11A	04/25/01	< 10	< 10	< 10	< 10				< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0		< 5.0	
MW-11A	07/26/01	< 10	< 10	< 10					< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0		< 10	< 5.0	< 10	< 5.0			< 10	< 10	< 10	< 10	< 10	< 10		< 10	< 25	< 10	< 10	< 5.0		< 50	
MW-11A	10/24/01	< 10	< 10			< 10			< 5.0	< 10	< 5.0	< 5.0	< 10		< 10		 < <u>5</u> .0	< 10	< 5.0	< 10	< 10		< 10	< 10	< 10	< 10		< 10		< 25	< 10	< 10	< 5.0		< 5.0	
MW-11A	01/24/02	< 10	< 10	< 10				< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10		< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0			
MW-11A	05/09/02	< 10	< 10	< 10		< 10			< 5.0	< 10	< 50	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10			< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10	< 25	< 10		< 5.0			
MW-11A	08/08/02	< 10				< 10			< 5.0				< 10	< 5.0		< 10	< 5.0	< 10	< 5.0		< 10	< 10	< 10		< 10	< 10	< 10	< 10	< 10	< 25	< 10		< 5.0			
MW-11A	11/01/02	< 10	< 10	< 10 < 10		< 10		< 5.0 < 5.0	< 5.0 < 5.0		< 5.0	< 5.0	< 10 < 10	< 5.0	< 10 < 10	< 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 25	< 10 < 10	< 10 < 10	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0
MW-11A MW-11A	02/04/03 05/06/03	< 10 <10	< 10 <10			<10				<10	<5.0 <5.0	<5.0 <5.0	<10	<5.0	<10	<10		<10	< 5.0 < 5.0	<10		<10	<10	<10	<10	<10	<10	<10	<10	< 25 <25	<10	<10	< 5.0 <5.0	< 5.0 < 5.0		<5.0 <5.0
MW-11A	09/04/03	< 10	< 10					< 5.0	< 5.0		< 5.0	<50	< 10		< 10		< 5.0	< 10	< 5.0	< 10		< 10	< 10		< 10	< 10	< 10		< 10	<25 < 25	< 10		< 5.0		< 5.0	
MW-11A	10/29/03		< 10					< 50	< 5.0	< 10	< 5.0	< 5.0	< 10		< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 25	< 10		< 5.0		< 5.0	
MW-11A	02/03/04		< 10		< 10				< 5.0	< 10	< 5.0	< 5.0	< 10		< 10	< 10		< 10	< 5.0	< 10		< 10	< 10	< 10	< 10	< 10	< 10				< 10				< 5.0	
MW-11A	05/18/04	< 10	< 10	< 10				< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10		< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0		< 5.0	
MW-11A	08/10/04		< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-11A	11/16/04		< 10				< 10			< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 50	< 5.0	< 5.0
				<u></u>										<u>. </u>					لتنت	لــــــــــــــــــــــــــــــــــــــ				•		-									ا تن—	

TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

				_				Γ	r	r						 -	T .									1							T			П			
		oroethan	hane	ane	pane	enol	loner	lomentol	lou	5	9-	92	alene		dene	_			nzkline			phenyl	nyipheno		phenyl	lanone	_			_	Q								e de
		gch	oroel	Deth	o o o	y d	orop	Q	do Ada	phe Phe	tolue	folce	the ap	g	#de	heno	<u>e</u>	ō	robe	<u>8</u>	.2- and	heny	-ae	niine	henyl	§	鱼	2	ē	hene	hyter	g g	2	[8	5	æ	3	# Proc
		2-Tett	Trich	chlor	<u>G</u>	imett	ifchi	Fi Fi	cho	initro	initro	<u>laffro</u>	Q Q	GEO	di diydi	₹ d	oguil	ophe)ichic	E CO	initro- ytbhe	đou.	99	orodi	orop.	#yt-2	호		륋	apht	dp	gce	or 1016	or 1221	or 1232	or 1242	or 12,	or 1254	(o
1	Compound	1,1,2	1,1,2-	1,2-D],2-D	24-0	2,4,5	2,4.6	240	2,40	2,4-D	2,6-D	\ \frac{1}{2}	2-He)	2-Me	2-Me	卓	2-Nit	3,3'-[불	4,6-D meth	4-Bro	2	₹ :	구 한 호	₽.V	₽₩.	₹ ₹	育	Acer	Çe i	Anth.	120	<u>[</u> 2	100	Joe J	Q	Q Q)ZU9Ç
	Method							, ,																	, , ,								ļ						
Well ID MW-12	11/14/02	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L) < 10	(µg/L) < 25	(µg/L) < 10	(µg/L) < 10	(µg/L) < 25	(µg/L) < 10	(µg/L) < 10	(µg/L) < 10	(µg/L)	(µg/L) < 10	(µg/L) < 10	(µg/L) < 25	(µg/L) < 10	(μg/L) < 10	(µg/L) < 25	(μg/L) < 25	(µg/L) < 10	(µg/L) < 10	(µg/L) < 10	(µg/L) < 10	(µg/L)	(µg/L) < 10	(µg/L) < 25	(µg/L) < 25	(µg/L) < 10	(µg/L) < 10	(μg/L) < 10	·	(μg/L) < 0.5	(µg/L) < 0.5	(µg/L) < 0.5	(µg/L) < 0.5	(µg/L) < 0.5	(µg/L) < 10
MW-12	12/11/02	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-12 (DUP)	12/11/02	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-12 MW-12 (DUP)	02/05/03 02/05/03	< 5.0 < 5.0		< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 = < 10	< 10 < 10	< 0.5	< 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 10 < 10
MW-12	05/07/03	< 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	I .				< 0.50	< 10
MW-12 (DUP)	05/07/03	< 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10				< 0.50			< 10
MW-12 MW-12 (DUP)	08/13/03 08/13/03	< 5.0 < 5.0			< 5.0 < 5.0	< 10	< 25 < 25	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 0.50 < 0.50	1		< 0.50 < 0.50		< 0.50 < 0.50	< 10
MW-12	10/28/03	< 5.0	t .	1	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.25			< 0.25		< 0.25	< 10
MW-12	02/04/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	1			< 0.50		< 0.50	< 10
MW-12 MW-12	05/19/04 08/11/04	< 5.0 < 5.0			< 5.0 < 5.0	< 10	< 25 < 25	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 0.25 < 0.50			< 0.25 < 0.50		< 0.25	< 10
MW-12 (DUP)	08/11/04	< 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50			< 0.50		< 0.50	< 10
MW-12(DUP)	11/17/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50	< 0.50	< 0.50	< 0.50		< 10
MW-12 MW-13	11/17/04 12/11/02	< 5.0 < 5.0			< 5.0 < 5.0	< 10	< 25 < 25	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 0.50 < 0.5	< 0.50 < 0.5	< 0.50 < 0.5	< 0.50 < 0.5	< 0.50 < 0.5	< 0.50 < 0.5	< 10
MW-13	02/04/03	< 5.0		< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-13	05/06/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-13	08/12/03	< 5.0		< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10	< 25 < 25	< 25 < 25	< 10	< 10	< 10	< 0.50			< 0.50		< 0.50	< 10
MW-13 MW-13	10/28/03 02/03/04	< 5.0 < 5.0		< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10 < 10	< 10 < 10	< 10	< 10	< 10	< 25	< 10	< 10 < 10	< 25 < 25	< 25	< 10	< 10	< 10 < 10	< 10	< 10	< 10 < 10	< 25	< 25	< 10 < 10	< 10 < 10	< 10 < 10		T .		< 0.25 < 0.50		< 0.25 < 0.50	< 10 < 10
MW-13	05/18/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 10
MW-13	08/11/04	< 5.0		< 5.0		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		1 .		< 0.50			< 10
MW-13 MW-14	11/17/04 12/11/02	< 5.0 < 5.0		< 5.0 < 5.0		< 10	< 25 < 25	< 10	< 10	< 25 < 25	< 10	< 10 < 10	< 10	< 10 < 10	< 10	< 10	< 25 < 25	< 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10	< 10	< 10 < 10	< 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 0.50 < 0.5	< 0.50 < 0.5	< 0.50	< 0.50 < 0.5	< 0.50	< 0.50 < 0.5	< 10
MW-14	02/04/03	< 5.0		1		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
MW-14	05/06/03	< 5.0	< 5.0	1		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10				< 0.50		< 0.50	< 10
MW-14 MW-14	08/12/03 10/28/03	< 5.0 < 5.0				< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10				< 0.50 < 0.25		< 0.50 < 0.25	< 10 < 10
MW-14	02/03/04	< 5.0	< 5.0			< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10				< 0.50		< 0.50	< 10
MW-14	05/18/04	< 5.0		1		1	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10				< 0.25		< 0.25	< 10
MW-14 MW-14	08/11/04 11/16/04	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	1		< 25 < 25	< 10	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 25 < 25	< 10	< 10 < 10	< 10		F		< 0.50 < 0.50			< 10 < 10
MW-15A	09/16/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-15A (DUP)	09/16/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-15A MW-15A	10/29/03 02/04/04	< 5.0	< 5.0	< 5.0	< 5.0 < 5.0	< 10 < 10	< 25 < 25	< 10	< 10	< 25 < 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25 < 25	< 10 < 10	< 10 < 10	< 25	< 25	< 10 < 10	< 10	< 10	< 10	< 10 < 10	< 10	< 25	< 25	< 10	< 10	< 10 < 10	< 0.50 < 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-15A	02/04/04					< 10			< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	 < 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.25	< 0.30	< 0.25	< 0.25	< 0.25	< 0.25	< 10
MW-15A	08/10/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	l < 10	< 10	l < 10	< 10	< 10	< 25 < 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-15A	11/15/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25 < 25	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50 < 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-15B MW-15B	09/15/03 10/29/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	l < 10	< 10	l < 10	< 25	 < 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10 l	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-15B	02/04/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-15B	05/18/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	l < 10	< 10	< 10	l < 10	 < 10	l < 10	< 25	l < 10	l < 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10 l	< 10	< 25	< 25	< 10	< 10	< 10	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 10
MW-15B MW-15B	08/10/04 11/16/04	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25 < 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25 < 25	< 10	< 10	< 10	< 0.50 < 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-16A	09/15/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-16A	10/29/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-16A MW-16A	02/04/04 05/20/04	< 5.0 < 5.0	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 25	< 10 < 10	< 10 < 10	< 25	< 25 < 25	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 25 < 25	< 25 < 25	< 10	< 10	< 10	< 0.50 < 0.25	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-16A	08/12/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
																								•——											كتنب				

TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

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	1		ene	ē	e e	퉏	Ē		ł		₽ Q			ğ	ΘŽ		ţ.	₽	l			2	£ .	tre	ایا	yrer			鬞	5		1 1				
		g	ŧ	욷	Ę	늍	/jet				룓			ρά	ŧ		E E	용	I			82	tadii l	형	ğ	음			Š	8				_ e		,
		e	DO	8.	ğ	<u> </u>	ģ		§		၌	횥		ρίο	z(a,h)ant	5	οg	불	9	p		<u> </u>	ğ	Š	₩	ટ્સ		<u> </u>	훙	8	٤			8	g.	5
		ğ)flu	4	. 5 <u>₽</u> (≩	do	Ę	₹	용	₽	훁	g l	호	d,	ş	ς l	\frac{1}{2}	8	ž	•	&	ğ	8	8	1,2,	윷	82	형	<u>§</u>	重			7 &	ᇫ	<u> </u>
		용)O(£	5)0) O(k	. 8	. 20	ğ	힐	- B	ğ	💆	ğ	퓑)Z	22	Ĕ	8	图	ᅙ	9.0	덜	ပ္မွ	Ç	ฐ	Ď.	ğ	<u>\$</u>	ğ	ᇦᅵ	ğ	p	ā	÷ 8	5	SĈ
	Compound	917	9112	₽	뒽	5,5d 5d	15(2) Tho	5 ا	ē	ğ	ă	욹	홏	- 1	8	<u>8</u>	ξ	토	≩	3) JO	Xe	×e	× 6	ă	g g	ğ	윭	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1 \$ 1	je.	ē	P.	유명	<u>}</u>	ِ بَ
	Method	<u> </u>	-			<u> </u>	<u> </u>									Δ_			<u> </u>	_ =	<u>IC</u>	-		<u> </u>	<u> </u>	_ <u>-</u> E	*	_ Z	Z	<u> </u>	<u> </u>		- 53	+ □		_ * _
Well ID	Sample Date	(ug/L)	(µg/L)	(ug/L)	(µg/L)	(ug/L)	(µg/L)	(µg/L)	(µg/L)	(ua/L)	(µg/L)	(µg/L)	(ua/L)	(µg/L)	(µg/L)	(ug/L)	(µg/L)	(ug/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(ug/L)	(µg/L)	(µg/L)	(ug/L)	(µg/L)	(ua/L)	(µg/L)	(µg/L)	(ua/l)	(µg/L)	(ug/L)	(µg/L)	(µg/L)	Jug/II
MW-12	11/14/02	< 10	< 10	< 10	< 10	< 10	< 10			< 10	4F-07-7		< 10	1 -3,-1	< 10	< 10	1F.57 -7	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	129/4/	1997-7		149/-/
MW-12	12/11/02	< 10		< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-12 (DUP)	12/11/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 50
MW-12	02/05/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-12 (DUP)	02/05/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-12	05/07/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-12 (DUP)	05/07/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 50	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-12	08/13/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 50	< 5.0	< 50
MW-12 (DUP)	08/13/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 50	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-12	10/28/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 50	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-12	02/04/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-12	05/19/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-12	08/11/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-12 (DUP)	08/11/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 50	< 5.0	< 5.0
MW-12(DUP)	11/17/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 50	< 5.0	< 5.0
MW-12	11/17/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-13	12/11/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-13	02/04/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-13	05/06/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-13	08/12/03	< 10	< 10	< 10	10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-13	10/28/03	< 10	< 10	< 10	10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 50	< 10 < 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	< 5.0	< 5.0	< 5.0
MW-13	02/03/04 05/18/04	< 10	< 10 < 10	< 10	< 10	< 10	< 10 < 10	< 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0	< 50	< 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 5.0	< 10 < 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	< 5.0	< 5.0	< 5.0
MW-13 MW-13	08/11/04	< 10 < 10	< 10	< 10 < 10	< 10	< 10	< 10	< 5.0 < 5.0	< 5.0	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 5.0	< 10	< 10	< 5.0 < 5.0	< 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0 < 5.0
MW-13	11/17/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0
MW-14	12/11/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	× 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 50	< 5.0
MW-14	02/04/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 50	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-14	05/06/03	< 10		< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-14	08/12/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 50		< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-14	10/28/03	< 10		< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-14	02/03/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0		< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-14	05/18/04	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	1	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	< 5.0	< 50	< 5.0
MW-14	08/11/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 50	< 5.0	< 5.0	< 5.0
MW-14	11/16/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 50
MW-15A	09/16/03		< 10	< 10				< 5.0	< 5.0					< 5.0			< 50	< 10	< 5.0					< 10		< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
- MW-15A (DUP)	09/16/03						< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-15A	10/29/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 50	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-15A	02/04/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 50	< 5.0	< 10	< 5.0	 < 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25						
MW-15A	05/18/04				< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10		< 10	< 10	< 10	< 10	< 25						
MW-15A	08/10/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 50	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-15A	11/15/04		< 10			< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10								< 25						
MW-15B	09/15/03		< 10			< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10								< 25				< 5.0		
MW-15B	10/29/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 50	< 5.0
MW-15B	02/04/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10			< 25						
MW-15B	05/18/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		
MW-15B	08/10/04				< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-15B	11/16/04	< 10	< 10	1 < 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 50	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 50	< 10	< 10	< 10								< 25						
MW-16A	09/15/03				< 10																			< 10						< 25				< 5.0		
MW-16A	10/29/03	< 10	1 < 10	< 10	< 10	1 < 10	< 10	< 5.0	< 5.0 - 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0 - 5.0	< 10	< 10 < 10	55.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10 - 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-16A	02/04/04	10	1 5 10	1 > 10	< 10	1 2 10	510	55.0	> 5.0	> 10	> 5.0	> 5.0	> 10	55.0	> 10	1 2 10	> 5.0	10	< 5.0	< 10	< 10 - 10	10	\ 10 \ 10	5 10	× 10	10	\ 10	\ \ 10	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	< 25 < 25	< 10	10	< 5.0	< 5.0	< 5.0	< 5.0
MW-16A	05/20/04	10	1 2 10	1 5 10	1 210	1 2 10	10	> 5.0	> 5.0	10	> 5.0	> 5.0	10	> 5.0	10	1 210	> 5.0	10	5.0	< 10 l	> 10	1 10	\ \ 10	\ 10	< 10	> 10	\ 10	5 10	1 < 10	< 25	< 10	< 10	< 5.0	55.0	< 5.U	< 5.0
MW-16A	08/12/04	1 2 10	1 > 10	1 > 10	1 > 10	<u> </u>	<u> </u>	T > 2.0	> 5.0	<u> </u>	<u> </u>	L > 3.0	<u> </u>	5.0	<u> </u>	<u> </u>	_ > 5.0	N U	< 5.0	710	\ <u>\</u>	L > 10	<u> </u>	_ \ IU_	_ \ 10		\ IU	<u> </u>	1 × 10	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<u> </u>	_ <u> </u>	<u> 500</u>	< 5.0	< 5.0	< 5.0

TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

		,			,		, , ,																										,						
	Compound	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,2-Dichloroethane	1,2-Dichloropropane	2.4-Dimethyl phenol	2,4,5-Irichlorophenol	2,4,6-Irichlorophenol	2,4-Dichlorophenol	2,4-Dinttrophenol	2.4-Dinitrotoluene	2,6-Dinitrotoluene	2-Chloronaphthalene	2-Hexanone	2-Methylnaphthalene	2-Methylphenol	2-Nitroaniine	2-Nitrophenol	3,3'-Dichlarobenzidine	3-Nitroaniine	4,6-Dinitro-2- methylphenol	4-Bromophenyl phenyl ether	4-Chloro-3-methylphenol	4-Chloroaniline	4-Chlorophenyl phenyl ether	4-Methyt-2-pentanone	4-Methylphenol	4-Nitroaniine	4-Nitrophenol	Acenaphthene	Acenaphthylene	Anthracene	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Arocky 1254	Benz(a)anthracene
Well ID	Method Sample Date	(µg/L)	(µg/L)	(µg/L)	(ua/L)	(µg/L)	(µg/L)	(ua/L)	(µg/L)	(µg/L)	(ua/L)	(µg/L)	(µg/L)	(ua/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(ug/L)	(µg/L)	(ug/L)	lug/L)	(µg/L)	(ug/L)	(µg/L)	(ug/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	/ua/11	(µg/L)	(ua/l)	(ug/1)	(µg/L)	(µg/L)	(µg/L)	lug/ii
MW-16A	11/17/04	< 5.0	< 5.0	******	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50	11 7 1	**********			< 10
MW-16B	09/16/03	< 5.0			< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50			< 0.50		< 10
MW-16B	10/29/03	< 5.0	< 50		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50					< 10
MW-16B	02/04/04	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50					< 10
MW-16B (DUP)	02/04/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50			1		
MW-16B	05/20/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.25					< 10
MW-16B	08/12/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50				< 0.50	< 10
MW-16B	11/17/04	< 5.0	< 5.0	< 5.0	< 50	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-16C	09/15/03	< 5.0	< 50	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50						< 10
MW-16C	10/29/03	< 5.0	< 50	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.25	< 0 25	< 0.25	< 0.25	< 0.25	< 0.25	< 10
MW-16C (DUP)	10/29/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-16C	02/04/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50					
MW-16C	05/20/04	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.25				< 0.25	< 10
MW-16C (DUP)	05/20/04	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.25					< 10
MW-16C	08/12/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-16C (DUP)	08/12/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-16C(DUP)	11/17/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-16C	11/17/04	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50			< 0.50	< 0.50	< 10
MW-17A	09/15/03	< 5.0	< 5.0			< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50			< 0.50		< 10
MW-17A	10/29/03	< 5.0	< 5.0			< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50				< 0.50	< 10
MW-17A	02/04/04	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50					< 10
MW-17A	05/18/04	< 5.0	< 5.0	1 .	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.25					< 10
MW-17A	08/10/04	< 5.0	< 5.0	I .	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50		- 1			< 10
MW-17A	11/16/04	< 5.0	< 5.0	< 50	< 5.0	< 10		< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50					< 10
MW-17B	09/15/03	< 5.0	< 5.0	1	1	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50			< 0.50		< 10
MW-17B	10/29/03	< 5.0	< 5.0	< 5.0		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
MW-17B	02/04/04	< 5.0	< 5.0	< 5.0		< 10		< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10							< 10
MW-17B	05/18/04	< 5.0	< 5.0	1	< 5.0		< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.25				- 1	< 10
MW-17B	08/10/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50					< 10
MW-17B	11/17/04	< 50	< 5.0		< 5.0			< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10		< 0.50						< 10
MW-18	09/16/03	< 5.0	< 5.0	1				< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50					< 10
MW-18	10/29/03	< 5.0	< 5.0		4	1	1	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	1 1	< 0.25					- 1
MW-18	02/04/04	< 5.0	< 5.0		1	1		< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10		< 0.50						
MW-18	05/20/04	< 5.0	< 50		1 .	F .	I	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25		< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10		< 0.25						
MW-18 MW-18	08/10/04 11/16/04																																< 0.50 < 0.50						
MW-20A	04/19/04	250	250	250	< 50 < 50	2 10	< 25	< 10	< 10	225	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10 < 10	< 25	7 25	Z 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10		< 25					< 0.50						
MW-20A	05/19/04						< 25																										< 0.25						
MW-20A	08/11/04						< 25			< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25					< 0.50						
MW-20A	11/16/04	< 5.0		< 5.0						< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25			< 10		< 10	< 10	< 10		< 25	< 10			< 0.50						
MW-20B	04/19/04	< 5.0	< 5 n	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25						< 10		< 10	< 10	< 25	< 25			< 10			< 10				< 10		< 0.50						
MW-20B	05/19/04						< 25									< 10		< 10	< 10	< 25	< 25	< 10	< 10		< 10	< 10		< 25	< 25				< 0.25						
MW-20B (DUP)	05/19/04	< 5.0					< 25						< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25				< 0.25						
MW-20B	08/11/04	< 5.0		< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10		< 25				< 0.50						
MW-20B	11/16/04	<50					< 25			< 25	< 10		< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10		< 25	< 10			< 0.50						
MW-20C	04/20/04			< 5.0					< 10				< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25					< 10						< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-20C	05/20/04						< 25						< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10							< 0.25						
MW-20C	08/12/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25			< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10		< 10	< 25	< 25	< 10	< 10		< 0.50						
MW-20C	11/17/04	< 50	 < 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10 < 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10		< 0.50						
MW-21A	04/20/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
MW-21A	05/20/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.25	< 0 25	< 0 25	< 0.25	< 0.25	< 0 25	< 10
MW-21A	08/09/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10

TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

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			thene	ene ene	Tener energy	etta	ether				bride			өдох	Tace		netha	ā ē				eue	Z lear	opent	₽)pyrer			yamlı	2						
		утеле	Jour	o(g.h.i)peryle	orgin	L (Ax	opropyl)eth	_	hane		fach	en e		hloroj)anfl	ē	Se	phthalate	<u>g</u>	8		- Speri	obuto	ρλο	at pe	3-cd		٤	phen	aydo.	92			De de	8	₫
		d(a)b	#(q)c) ģ	<u> </u>	₹	8	oform	e Lo	azole	P te	Se	919	306	ız(α,ř	Injozu	<u>8</u>	ξ	26nze	ag	§.	chlor	chlor	chlor	ch No	0(1,2	do d	Senze	lposo	chia	aff f		9	1,3 ropr	뒇	8, 7 ₀
	Compound	3enzc	3enzc) yeur	Senza	38(2-	28 (2) Short	3com	Ę,	Ç G	Carb	Chio	Chrys	Ω\$-1,	Diber	Diber	<u>2</u>	구 구	Ethylk	Foor	Pluore	- Jexo-	- Jexe	- Jexa	Jexa Jexa	nden	dos	Elfrob	Ę Z	enta	Į į	утел	lyre	dans-	Jyn/	y (V
	Method									/			7 - 83	(0)	4 (1)															-				-		
Well ID MW-16A	Sample Date	(µg/L) < 10	(µg/L) < 10	(ha/r)	(µg/L)	(µg/L)	(µg/L) < 10	(µg/L) < 5.0	(µg/L) < 5.0	(µg/L) < 10	(μg/L) < 5.0		(µg/L) < 10	(µg/L) < 5.0	(μg/L) < 10	(µg/L) < 10	(µg/L) < 5.0	(µg/L) < 10	(µg/L) < 5.0	(µg/L) < 10	(µg/L) < 10	(µg/L) < 10	(µg/L) < 10	(µg/L) < 10	(µg/L) < 10	(µg/L) < 10	(µg/L) < 10	(µg/L) < 10	(µg/L) < 10	(µg/L) < 25	(µg/L) < 10	(µg/L) < 10	(µg/L) < 5.0	(µg/L) < 5.0	+	
MW-16B	09/16/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		
MW-16B	10/29/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		
MW-16B MW-16B (DUP)	02/04/04 02/04/04	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10	< 5.0	< 5.0		< 5.0 < 5.0
MW-16B	05/20/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0
MW-16B	08/12/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-16B	11/17/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 5.0 < 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-16C MW-16C	09/15/03 10/29/03	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 5.0	< 5.0	< 10 < 10	< 5.0	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-16C (DUP)	10/29/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	í 1	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-16C	02/04/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-16C MW-16C (DUP)	05/20/04 05/20/04	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0		< 5.0 < 5.0
MW-16C	08/12/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-16C (DUP)	08/12/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-16C(DUP)	11/17/04	< 10		< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-16C MW-17A	11/17/04 09/15/03	< 10 < 10	< 10 < 10	< 10	< 10	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10	< 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-17A	10/29/03	< 10		< 10	< 10	< 10	< 10	< 5.0	< 5.0		< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
MW-17A	02/04/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	1 1	< 5.0
MW-17A	05/18/04 08/10/04	< 10		< 10 < 10	1	< 10	< 10	< 5.0	< 5.0 < 5.0	< 10	< 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 10	< 5.0 < 5.0	< 10	< 10 < 10	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		< 5.0
MW-17A MW-17A	11/16/04		< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10 < 10	< 5.0	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-17B	09/15/03	< 10		< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		
MW-17B	10/29/03	< 10		< 10	1	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-17B MW-17B	02/04/04 05/18/04	< 10 < 10		< 10 < 10	3	< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	<50 <50	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0		< 5.0 < 5.0
MW-17B	08/10/04	< 10		< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	<50	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-17B	11/17/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-18	09/16/03	< 10	1	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-18 MW-18	10/29/03 02/04/04	< 10 < 10		< 10 < 10		< 10 < 10	< 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10	< 5.0 < 5.0	< 10 < 10	< 5.0 < 5.0	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10 < 10	< 10 < 10	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-18	05/20/04	< 10		< 10		< 10	< 10	< 5.0		< 10	< 5.0	1		< 5.0		< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0		
MW-18	08/10/04	< 10		< 10				< 5.0		< 10	< 5.0						< 5.0		< 5.0		< 10	< 10		< 10	< 10	< 10		< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-18	11/16/04 ` 04/19/04	< 10 < 10		< 10		< 10		< 5.0	< 5.0 < 5.0	< 10	< 5.0	< 5.0 < 5.0	< 10	< 5.0	< 10	< 10	< 5.0 < 5.0	< 10	< 5.0	< 10	< 10	< 10 < 10	< 10	< 10	< 10	< 10	< 10 < 10								< 5.0	
MW-20A MW-20A	04/19/04		< 10				< 10															< 10										< 10 < 10	< 5.0 < 5.0		< 5.0 < 5.0	
MW-20A	08/11/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 50	< 5.0
MW-20A	11/16/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10			< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-20B	04/19/04 05/19/04	< 10		< 10					< 5.0			< 5.0		< 5.0			< 5.0 < 5.0	< 10		< 10	< 10	< 10 < 10					< 10 V	< 10	< 10 < 10	< 25		< 10			< 5.0 < 5.0	
MW-20B MW-20B (DUP)	05/19/04				< 10		< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10					< 10	< 10	< 5.0	< 5.0 < 5.0	< 5.0 < 5.0	< 5.0 < 5.0
MW-20B	08/11/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-20B	11/16/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	 < 10	< 10	< 10	< 10	< 10	< 10		< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-20C MW-20C	04/20/04 05/20/04				< 10			< 5.0									< 5.0 < 5.0					< 10 < 10						< 10	< 10	< 25	< 10				< 5.0 < 5.0	
MW-20C MW-20C	08/12/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-20C	11/17/04		< 10				< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
MW-21A	04/20/04		< 10														< 5,0	< 10	< 5.0	< 10	< 10	< 10					< 10			< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
MW-21A MW-21A	05/20/04 08/09/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10 < 10	< 10	< 10	< 10	< 10 < 10	< 10 < 10	< 10	< 10 < 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0 < 5.0	< 5.0
14144-2174	1 50/5//54	1 - 10	1 - 10	1 , 10	1 3 10	1 10	1 - 10	1 - 0.0	- 0.0	<u>, ,,,,</u>	- 0.0	1 - 0.0	- 10	L - 0.0	<u> </u>		1 0.0		, J.U	' 10	1 - 10	<u>, , , , , , , , , , , , , , , , , , , </u>	- 10	10]	- 10	- 10			י ו	ريد	10	_ ~ IV _	1 - 5.5	- 5.0	- 5.0	

TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

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		§ §	8	8ૄ	δ	Ē	8	🗯	8	춙	l gr	do la	₽	g.	₽	ੈ	홑	<u> </u>	ğ	E E	4 6	Ž	֝֡֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓		1	, <u>a</u>	횰	<u>.</u>	짙	<u>ē</u>	<u>₹</u>	p	9101	5	8	2 4	8	22	Į į
		<u>ē</u>	퉏	옭	岩	횰	뒫	뒫	욹	를	퉏	튵	ğ	盲	훋	🛓	ğ	츛	충	ਰੂ	曹臣	ğ	ĺģĺ	8	💆	ž	출	Ē	ğ	ᇫ	효	<u>8</u>	=	12	= 1	Ę	- 2	[]	흥
		27	7-2.	Įž	ğ	호	1.5.	1-6	호	호	호	호	훉	ě	že Ž	Ş Ş	ŧ	育	Ö	🙀	₹	1 2 3	총	폵	충호	Aet l	} Je		툍	Ě) E	ĬĔ	8	ᄫᆝ	发	췻	ᇫ	ᇫ	岁
1	Compound	_=_		=		2,4	. 2.	à	- 27	-à-	- 2	2,	-8-	-5	-7-	-5	-2	2	8	ल	4 E	4.2	4	¥	4.2	4	4	4	4	×	¥		¥	¥	¥ .	_₹	¥	¥ .	_ & _
	Method			(- ()		(1)	(7)	((1)	f (1.)	1 (1.)	1(1.)	1	1.10 (1.)	1	1	1	1	1 0.3	1	1	(fi)	1	((1)	(5)	1			,		((1)			ļ.,						
Well ID	Sample Date																								(µg/L)									(µg/L)		(ha\r)			
MW-21A	11/15/04		< 5.0		< 5.0 < 5.0	< 10		< 10	< 10 < 10	< 25 < 25	< 10	< 10	< 10 < 10	< 10	< 10 < 10	< 10 < 10	< 25 < 25	< 10	< 10	< 25 < 25	< 25 < 25	< 10 < 10	< 10	< 10	< 10 < 10	< 10	< 10 < 10	< 25 < 25	< 25	< 10		< 10	1-	< 0.50					
MW-21B	04/20/04 04/20/04		< 5.0	< 5.0		< 10	< 25 < 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10 < 10	< 10		< 25 < 25	< 10 < 10	< 10 < 10	< 10 < 10	< 0.50 < 0.50	< 0.50 < 0.50		< 0.50			
MW-21B (DUP) MW-21B	05/20/04	< 5.0		< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25 < 25	< 25	< 10	< 10	< 10	ı	< 0.30		< 0.30	1		
MW-21B	08/09/04	< 5.0	i .	ı	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.25					< 10
MW-21B	11/15/04	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10				< 0.50		- 1	< 10
SP-1	08/06/02	< 5.0		< 5.0		< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10			< 0.5	< 0.5	< 0.5	< 0.5	< 10
SP-1	11/12/02					< 10	< 25	< 10	< 10	< 25		< 10	< 10	_	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10		< 10	< 25	< 25	< 10	< 10	< 10		< 0.5			< 0.5	< 0.5	< 10
SP-1	02/06/03	< 5.0	1	< 5.0	< 5.0									< 10												< 10													
SP-1	09/04/03	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	l < 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
SP-1	10/29/03	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10					< 0.50		< 10
SP-1	02/05/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10				< 0.50			
SP-1	05/20/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 10
SP-1	08/12/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
SP1	11/18/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
WSW-1	04/25/01	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.20	< 0.40	< 0.20	< 0.20	< 0.20	< 0.20	< 10
WSW-1	07/24/01	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
WSW-1	10/23/01	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
WSW-1	01/23/02	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 10
WSW-1	10/30/02	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.5	< 0.5	< 0.5	< 0.5		< 0.5	< 10
WSW-1	08/13/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	4	< 0.50	1				< 10
WSW-1	10/27/03	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10
WSW-1-100'	12/18/03	< 5.0			< 5.0									< 10												< 10]		,
WSW-1-120'	12/18/03	< 5.0	< 5.0		< 5.0									< 10						"						< 10													
WSW-1-140'	12/18/03	< 5.0	< 5.0		< 5.0								-10	< 10	-10	-10										< 10													
WSW-1	02/03/04	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10	\ \ 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50					
WSW-1	05/18/04	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25	< 10	< 10	< 10	< 10	< 10 < 10	< 10	< 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.25		-			
WSW-1	08/09/04	< 5.0	< 5.0		< 5.0	< 10	< 25	< 10	< 10	< 25 < 25	< 10	< 10	< 10	< 10 < 10		< 10	< 25 < 25	< 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10		< 0.50					
WSW-1	11/15/04	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 25	< 10	< 10	(4)	< 10	< 10	1 < 10	<u> </u>	< 10	< 10	<u> </u>	L < 10	< 10	< 25	< 25	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 25	< 10	< 10	< 10	 < 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 10

TABLE 3-2
POST REMEDIATION GROUNDWATER ANALYTICAL RESULTS FOR UNDETECTED ORGANICS
MISSOURI ELECTRIC WORKS

							Ι -							Q		·	g					<u> </u>		- B												
	Compound	3enzo(a)pyrene	3enzo(b)fluoranthene	3enzo(g,h,l)perylene	Benzo(k)fluoranthene	3k(2- chloroethoxy)methane	3ls(2- chlorolsopropyl) ether	Sromoform	Sromomethane	Carbazole	Carbon fefrachloride	Chloroethane	Chrysene	cls-1,3-Dichloropropen	Olbenz(a,h)anthracen	Sibenzofuran	Dibromochloromethan	Ohn-octyl phthalate	:!hylbenzane	luordnithene	luorene	4exachlorobenzene	1exachlorobutadiene	1exachlorocyclopento ane	1exachloroethane	ndeno(1,2,3-cd)pyrenv	sophorone	Vitrobenzene	Nitrosodiphenykamin	entachlorophenol	henanthrene	улепе	.tyrene	rans-1,3- Vichloropropene	/lnyl chloride	ylenes, Total
	Method						" 																				-#-				"	-	- N	-		
Well ID	Sample Date	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)							(µg/L)	(µg/L)					(µg/L)	(µg/L)		(µg/L)	(µg/L)	(µg/L)	(µg/L)		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-21A	11/15/04	< 10	< 10	< 10	< 10	< 10	< 10			< 10	< 5.0		< 10	< 5.0	< 10	< 10			< 5.0		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
MW-21B	04/20/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	1
MW-21B (DUP)	04/20/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
MW-21B	05/20/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
MW-21B	08/09/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
MW-21B	11/15/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
SP-1	08/06/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10		< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
SP-1	11/12/02	< 10	< 10	< 10	< 10	< 10	< 10			< 10			< 10		< 10	< 10	••	< 10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10				/
SP-1	02/06/03							< 5.0	< 5.0	••	< 5.0	< 5.0		< 5.0			< 5.0	·	< 5.0	••			**		•-								< 5.0	< 5.0	< 5.0	
SP-1	09/04/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	1 1
SP-1	10/29/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
SP-1	02/05/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
SP-1	05/20/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
SP-1	08/12/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 50	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
SP1	11/18/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
WSW-1	04/25/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0		< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
WSW-1	07/24/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
WSW-1	10/23/01	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
WSW-1	01/23/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
WSW-1	10/30/02	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0
WSW-1	08/13/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
WSW-1	10/27/03	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
WSW-1-100'	12/18/03							< 5.0	< 5.0		< 5.0	< 5.0		< 5.0			< 5.0		< 5.0												i		< 5.0	< 5.0	< 5.0	
WSW-1-120'	12/18/03							< 50	< 5.0		< 5.0	< 5.0		< 5.0			< 5.0		< 50														< 5.0	< 5.0	< 5.0	,,
WSW-1-140'	12/18/03							< 5.0	< 5.0		< 5.0	< 5.0		< 5.0			< 5.0		< 5.0														< 5.0	< 5.0	< 5.0	. ,
WSW-1	02/03/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
WSW-1	05/18/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	F 1
WSW-1	08/09/04	< 10	< 10	< 10	< 10	< 10	< 10	< 5.0	< 5.0	< 10	< 50		< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	
WSW-1	11/15/04	< 10	< 10	<u> < 10</u>	< 10	T < 10	< 10	< 5.0	< 5.0	< 10	< 5.0	< 5.0	< 10	< 5.0	< 10	< 10	< 5.0	< 10	< 5.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 25	< 10	< 10	< 5.0	< 5.0	< 5.0	< 5.0

Notes

1- µg/L = micrograms per liter

2- < 50 = compound not detected at or above stated reporting limit

3- (EPA S) = sample collected by EPA and analyzed by an independent laboratory (original data not available for review)

4- (DUP) = duplicate sample

5- "--" = not analyzed

MEW Site File 3DISC100137

3DISC10013

TABLE 3-3
POST REMEDIATION SURFACE WATER ANALYTICAL RESULTS FOR CREEK
MISSOURI ELECTRIC WORKS

	Analytical	Well ID	A	В	С	DI	D2	D3
Compound	Method	Sample Date	08/15/03	08/12/03	08/14/03	08/15/03	08/15/03	08/15/03
Aroclor 1016	SW8082	μg/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aroclor 1221	SW8082	μg/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aroclor 1232	SW8082	μg/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Arocior 1242	SW8082	μg/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aroclor 1248	SW8082	µg/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aroclor 1254	SW8082	µg/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aroclor 1260	SW8082	µg/L	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Inchloroethane	SW8260B	µg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	SW8260B	µg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane	SW8260B	µg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethane	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethene	SW8260B	µg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethane	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	 < 5.0
1,2-Dichloroethene, Total	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloropropane	SW8260B	µg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	 < 5.0
2-Butanone	SW8260B	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
2-Hexanone	SW8260B	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	SW8260B	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Acetone	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromodichloromethane	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50
Bromoform	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromomethane	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon disulfide	SW8260B	µg/L	5.3	5.5	18	3.9 J	2.6 J	< 5.0
Carbon tetrachloride	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	SW8260B	µg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroform	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloromethane	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	3.1 J
cis-1,3-Dichloropropene	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Dibromochloromethane	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methylene chloride	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Styrene	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Tetrachloroethene	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	SW8260B	µg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
trans-1,3-Dichloropropene	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloroethene	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl chloride	SW8260B	μg/L	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2,4-Trichlorobenzene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
1,2-Dichlorobenzene	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
1,3-Dichlorobenzene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
1,4-Dichlorobenzene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
2,4,5-Trichlorophenol	SW8270C	μg/L	< 25	< 25	< 25	< 25	< 25	< 25
2,4,6-Trichlorophenol	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
2,4-Dichlorophenol	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
2.4-Dimethylphenol	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
2,4-Dinitrophenol	SW8270C	µg/L	< 25	< 25	< 25	< 25	< 25	< 25
2,4-Dinitrotoluene	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
2,6-Dinitrotoluene	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
2-Chloronaphthalene	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
2-Chlorophenol	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
2-Methylnaphthalene	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
2-Methylphenol	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
2-Nitroaniline	SW8270C	µg/L	< 25	< 25	< 25	< 25	< 25	< 25
2-Nitrophenol	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10

TABLE 3-3
POST REMEDIATION SURFACE WATER ANALYTICAL RESULTS FOR CREEK
MISSOURI ELECTRIC WORKS

	Analytical	Well ID	A	В	С	Dì	D2	D3
Compound	Method	Sample Date	08/15/03	08/12/03	08/14/03	08/15/03	08/15/03	08/15/03
3.3'-Dichlorobenzidine	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
3-Nitroaniline	SW8270C	μg/L	< 25	< 25	< 25	< 25	< 25	< 25
4,6-Dinitro-2-methylphenol	SW8270C	ug/L	< 25	< 25	< 25	< 25	< 25	< 25
4-Bromophenyl phenyl ether	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
4-Chloro-3-methylphenol	SW8270C	μg/L μg/L	< 10	< 10	< 10	< 10	< 10	< 10
4-Chloroaniline	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
4-Chlorophenyl phenyl ether	SW8270C		< 10	< 10	< 10	< 10	< 10	< 10
4-Methylphenol	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
4-Nitroaniline	SW8270C	µg/L µg/L	< 25	< 25	< 25	< 25	< 25	< 25
4-Nitrophenol	SW8270C		< 25	< 25	< 25	< 25	< 25	< 25 < 25
•	1	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Acenaphthene	SW8270C	µg/L						
Acenaphthylene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Anthracene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Benz(a)anthracene	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(a)pyrene	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(b)fluoranthene	SW8270C	h8/r	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(g,h,i)perylene	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
Benzo(k)fluoranthene	SW8270C	hg/r	< 10	< 10	< 10	< 10	< 10	< 10
Bs(2-chloroethoxy)methane	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Bis(2-chloroethyl)ether	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
Bis(2-chloroisopropyl)ether	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
Bis(2-ethylhexyl)phthalate	SW8270C	µg/L	< 10	3.2 JH	< 10	< 10	8.8 J	1.8 J
Butyl benzyl phthalate	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Carbazole	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Chrysene	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
Dibenz(a,h)anthracene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Dibenzofuran	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Diethyl phthalate	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Dimethyl phthalate	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Di-n-butyl phthalate	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
Di-n-octyl phthalate	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
Fluoranthene	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
Fluorene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Hexachlorobenzene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Hexachlorobutadiene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Hexachlorocyclopentadiene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Hexachloroethane	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Indeno(1,2,3-cd)pyrene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Isophorone	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Naphthalene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Nitrobenzene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
N-Nıtrosodi-n-propylamine	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
N-Nitrosodiphenylamine	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10
Pentachlorophenol	SW8270C	μg/L	< 25	< 25	< 25	< 25	< 25	< 25
Phenanthrene	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Phenol	SW8270C	μg/L	< 10	< 10	< 10	< 10	< 10	< 10
Pyrene	SW8270C	µg/L	< 10	< 10	< 10	< 10	< 10	< 10

Notes

- 1- µg/L = micrograms per liter
- 2-<0.50 = compound not detected above the reporting limit
- 3-S = spike recovery outside accepted recovery limits
- 4- H \simeq holding times for preparation or analysis exceeded
- 5- J = compound detected above quantitation limit

TABLE 3-4 SELECTION OF CHEMICALS OF POTENTIAL CONCERN - DETECTED ORGANIC COMPOUNDS MISSOURI ELECTRIC WORKS

CAS				l 1		Į į						l . (i	! !
	Chemical	Minimum	Maximum	Units	Location	Detection	Range of	Method	Concentration	Background	Screening	Potential	Potential	COPC	Rationale for
Number		Concentration	Concentration			Frequency	Detection	Detection	Used for	Value	Toxicity Value	ARAR/TBC	ARAR/TBC	Flag	Selection or
		(Qualifier)	(Qualifier)	1	Concentration	<u> </u>	Limits	Limits	Screening		(N/C)	Value	Source	(Y/N)	Deletion
		(1)	(1)				(ug/L)	(ug/L)	(2)	(3)	(4)	(ug/L)			(5)
														<u>l</u>	
71-55-6	1,1,1-Trichloroethane	1.8J	8	ug/l	MW-10	20/249	5 - 5	0.24 - 0.53	8	NA	320 N	200	MCL/GTARC	N	BSL
75-34-3	1,1-Dichloroethane	10	31	υg/l	MW-10	72/249	5 - 5	0.12 - 0.40	31	NA	2 C			Y	ASL
75-35-4	1,1-Dichloroethene	10	10	ug/l	MW-10	42/249	5 - 5	0.22 - 0.72	10	NA	34 N	7	MCL/GTARC	N	BSL
120-82-1	1,2,4-Trichlorobenzene	1.8J	62	ug/i	MW-7	7/250	10 -10	0.79 - 1.7	<u>62</u>	NA	0.72 N	70	MCL/GTARC	Y	ASL
95-50-1	1,2-Dichlorobenzene	1.5J	33	ug/l	MW-12	39/250	10 -10	0.41 - 0.41	33	NA	37 N	600	MCL/GTARC	N	BSL
156-60-5/156-59-2	1,2-Dichloroethene Total	10	12	ug/l	MW-16C/11	37/249	5 - 5	0.55 - 0.58	<u>12</u>	NA	6.1* N	70*	MCL/GTARC	Υ	ASL
541-73-1	1,3-Dichlorobenzene	1J	100	ug/I	MW-12	49/250	10 - 10	0.46 - 1.3	<u>100</u>	NA	18 N		-	Y	ASL
106-46-7	1,4-Dichlorobenzene	13	120	ug/l	MW-12	63/250	10 - 10	0.51 - 1.4	<u>120</u>	NA	0.5 C	75	MCL/GTARC	Y	ASL
95-57-8	2-Chlorophenol	2.1J	9 J	ug/l	MW-12	7/248	10 - 10	1.66 - 1.7	9	NA	3 N	40	GTARC	Y	ASL
67-64-1	Acetone	5U	210	ug/l	MW-4	3/248	10 - 10	1.1 - 7.01	210	NA	550 N	_	-	N	ASL
71-43-2	Benzene	10	83	ug/l	MW-12	28/249	5 - 5	0.19 - 0.5	<u>83</u>	NA	0.35 C	5	MCL/GTARC	Y	ASL
111-44-4	Bis(2-Chloroethyl) Ether	6J	61	ug/l	MW-10/4	2/248	10 - 10	1.4 - 1.68	6	NA	0.01C	0.03	GTARC	Y	ASL
117-81-7	Bis(2-ethylhexyl)phthalate	1.6J	120	ug/l	WSW-1/11A	87/248	10 - 10	1.46 - 1.46	<u>120</u>	NA	4.8 C	6	GTARC	Y	ASL
75-27-4	Bromodichloromethane	1.9J	1.9J	ug/l	SP-1	1/249	5 - 5	0.1 - 0.38	1.9	NA	0.18 C	80	MCL/GTARC	Y	ASL
85-68-7	Butyl benzyl phthalate	3.6J	61	υg/l	MW-12/11	8/248	10 - 10	0.98 - 1.36	6	NA	730 N	3000	GTARC	N	BSL
108-90-7	Chlorobenzene	lU	3200	ug/l	MW-12	88/249	5 - 250	0.16 - 0.57	<u>3200</u>	NA	11 N	100	MCL/GTARC	Y	ASL
67-66-3	Chloroform	1.3J	13	ug/l	SP-1	9/249	5 - 10	0.14 - 0.64	<u>13</u>	NA	0.17 C	80	MCL/GTARC	Y	ASL
74-87-3	Chloromethane	٦J	6.3	ug/l	MW-11A	15/249	5 - 5	0.38 - 0.43	6.3	NA	16 N			N	BSL
84-74-2	Di-n-butylphthalate	1J	14	ug/l	MW-4	11/248	10 - 10	1.26 - 1.58	14	NA	360 N	_		N	BSL
131-11-3	Dimethyl phthalate	10U	890	ug/l	MW-12	1/247	10 - 100	1.47 - 3.37	890	NA	36,000 N	313,000	GTARC	N	BSL
84-66-2	Diethyl phthalate	6.6J	6.6J	ug/l	MW-17B	1/247	10 - 10	1.65 - 3.02	6.6	NA	2900 N	23,000	GTARC	N	BSL
75-09-2	Methylene chloride	2J	3J	ug/l	MW-10/WSW-1	9/249	5 - 1000	0.53 - 3.1	3	NA	4.3 C	5	GTARC	N	BSL
91-20-3	Naphthalene	4.7J	8.7J	ug/l	MW-3	3/248	10 - 10	1.5 - 1.89	<u>8.7</u>	NA	0.62 N	100	GTARC	Y	ASL
621-64-7	N-Nitrosodi-n-propylamine	4.5J	8.1J	ug/l	MW-12/17B	3/248	10 - 10	1.81 - 2.52	<u>8,1</u>	NA	0.0096 C	-	-	Y	ASL
11096-82-5	PCB(Aroclor 1260) - filtered	0.2U	4.5	ug/l	MW-11	3/54	0.2 - 10	0.085 - 0.50	4.5	NA	0.034 C	0.5	MCL/GTARC	Y	ASL
	- unfiltered	0.2U	110		MW-11/5	47/253	0.2 - 10	0.085 - 0.50	<u>110</u>	NA NA					1
108-95-2	Phenol	0.2U	260	ug/l	MW-11A	2/248	10 - 10	6.36 - 9.28	260	NA	1100 N	4000	GTARC	N	BSL
127-18-4	Tetrachloroethene	10	8.6	ug/l	MW-4	11/249	5 - 5	0.43 - 0.44	8.6	NA	0.1 C	5	MCL/GTARC	Y	ASL
108-88-3	Toluene	2J	2 J	ug/l	MW-6A	1/249	5 - 5	0.17 - 0.45	2	NA	72 N	150*	GTARC	N	BSL
	Trichloroethene	10	13	ug/l	MW-10	57/249	5 - 5	0.21 -0.56	<u>13</u>	NA	0.028 C	5	MCL/GTARC	Y	ASL
						T								1	

1- J = analyte detected but below limit of quantitation, B = analyte detected in method blank, U = analyte not detected

2-Maximum concentration detected used for screening

3- Background concentrations have not been used for screening

4- U.S. EPA Region 9 preliminary remediation goals for tap water exposure pathways used as the screening toxicity values. Note that the PRG values for non-carcinogens have been multiplied by 0.1 to account for potential additivity of noncancer health effects

5- Rational codes BSL = below screening level, ASL = above screening level

Bold underlined values exceed screening toxicity value

Definitions N/A = not applicable

* = lowest MCL used

C = carcinogen

NC = non carcinogen





TABLE 4-1 NON-CANCER TOXICITY DATA -- ORAL/DERMAL MISSOURI ELECTRIC WORKS

Chemical of Potential	Chronic/	Or	ral RfD	Oral Absorption Efficiency		bed RfD for Jermal	Primary Target	Combined Uncertainty/Modifying	RfD:Targ	et Organ(s)
Concern		Value	Units	for Dermai ¹	Value	Units	Organ(s)	Factors	Source(s)	Date(s) (MM/DD/YYYY)
1,1,2,2-Tetrachloroethane	Chronic	6 0E-02	mg/kg/day	1E+00	6 0E-02	mg/kg/day	Liver	300	RAIS/PPRTV	1/11/2004
1,1,2-Trichloroethane	Chronic	4 0E-03	mg/kg/day	1E+00	4 0E-03	mg/kg/day	Liver, Systemic Tissue	1000	IRIS	1/2/1995
1,1-Dichloroethane	Chronic	1 0E-01	mg/kg/day	1E+00	1 0E-01	mg/kg/day	None Observed	1000	RAIS/HEAST	1/11/2004
1,2 Dichloroethene (trans)	Chronic	2 0E-02	mg/kg/day	1E+00	20E-02	mg/kg/day	Blood	1000	IRIS	1/1/1989
1,2 Dichloroethene (cis)	Chronic	1 0E-02	mg/kg/day	1E+00	1 0E-02	mg/kg/day	Blood	3000	U S EPA, 2004/PPRTV,	1/10/2002
1,2,4 Trichlorobenzene	Chronic	1 0E-02	mg/kg/day	1E+00	1 0E-02	mg/kg/day	Adrenal Gland	1000	2002 IRIS	1/11/1996
1,2-Dichloroethane	Chronic	2 0E-02	mg/kg/day	1E+00	2 0E-02	mg/kg/day	Nervous System, Liver, Kidney	1000****	U S EPA, 2004 (H)	1/10/2004
1,2-Dichloropropane **	Chronic	1 1E-03	mg/kg/day	1E+00	1 1E-03	mg/kg/day	Respiratory	300	U S EPA, 2004 (R)	1/10/2004
1,3-Dichlorobenzene	Chronic	3 0E-02	mg/kg/day	1E+00	3 0E-02	mg/kg/day	Liver	No Data	U S EPA, 2004 (NCEA)	1/10/2002
1,4-Dichlorobenzene	Chronic	3 0E-02	mg/kg/day	1E+00	3 0E-02	mg/kg/day	Blood, Liver and Kidney	No Data	U S EPA, 2004 (NCEA)	1/10/2002
2,4,6-Trichlorophenol	Chronic	1.0E-04	mg/kg/day	1E+00	1.0E-04	mg/kg/day	No Data	No Data	U S EPA, 2004 (NCEA)	1/10/2004
2,4-Dinitrotoluene	Chronic	2 0E-03	mg/kg/day		2 0E-03	mg/kg/day	Blood, Liver, Reproductive System, Nervous System, Mortality	100	IRIS/RAIS	1/1/2005
2,6-Dinitrotoluene	Chronic	1 0E-03	mg/kg/day	1E+00	1.0E-03	mg/kg/day	Central Nervous System, Blood, Bile Duct, and Kldney	3000	IRIS/ATSDR/HEAST	1/1/1990, 12/1/1998, 1/1/1997
2-Chlorophenol	Chronic	5 0E-03	mg/kg/day	1E+00	5 0E-03	mg/kg/day	Reproductive System	1000	IRIS	1/7/1993
3,3-Dichlorobenzidine	Chronic	No Data		1E+00	No Data	-	No Data	No Data	IRIS/RAIS	1/11/2004
4,6-Dinitro-2-Methyl Phenol	Chronic	1 0E-04	mg/kg/day	1E+00	1 0E-04	mg/kg/day	Eye	No Data	IRIS/PPRTV	1/11/2004
Aroclor-1016	Chronic	7.0E-05	mg/kg/day	1E+00	7 OE-05	mg/kg/day	Fetus (low birth weight)	300	IRIS	10/1/1996
Aroclor-1221	Chronic	No Data		1E+00	No Data		No Data	No Data	IRIS/RAIS	1/11/2004
Aroclor-1232	Chronic	No Data	-	1E+00	No Data	-	No Data	No Data	IRIS/RAIS	1/11/2004
Aroclor-1242	Chronic	No Data		1E+00	No Data	-	Liver	No Data	IRIS/RAIS	1/11/2004
Aroclor-1248	Chronic	No Data	-	1E+00	No Data	•	Liver, Thymus, Skin, Developing Fetus	No Data	IRIS	1/11/1996
Aroclor-1254	Chronic_	2 0E-05	mg/kg/day	1E+00	2 0E-05	mg/kg/day	Skin, Immune System, Liver	300	IRIS	1/11/1996
Aroclor-1260	Chronic	No Data		1E+00	No Data		Liver, Skin, Immune System	No Data	IRIS/RAIS	1/11/2004
Benzene Benz(a)anthracene	Chronic	4 0E-03 No Data	mg/kg/day mg/kg/day	3 1E-01 ²	4 0E-03 No Data	mg/kg/day -	Blood, Immune System Hematopoletic System, Fetus, Reproductive System, Lymphold System, Intestinal Epithelium	300 No Data	IRIS IRIS/RAIS	4/17/2003
Benzo(a)pyrene	Chronic	No Data	•	3 1E-01 2	No Data	-	No Data	No Data	IRIS/RAIS	1/1/2005
Benzo(b)fluoranthene	Chronic	No Data	-	3 1E-01 ²	No Data	•	No Data*	No Data	IRIS/RAIS	1/1/2005
Benzo(k)fluoranthene	Chronic	No Data		3 1E-01 2	No Data	•	No Data	No Data	IRIS/RAIS	1/11/2004
bis(2-Chloroethyl) Ether	Chronic	No Data	•	1E+00	No Data	•	No Data	No data	RAIS/IRIS	1/11/2004
bis(2-Chioroisopropyi) Ether	Chronic	4 0E-02	mg/kg/day	1E+00	4 0E-02	mg/kg/day	Blood	1000	IRIS	1/8/1990
bis (2-Ethylhexyl phthalate)	Chronic	2 OE-02	mg/kg/day	1 9E-01 3	3 8E-03	mg/kg/day	Liver, Kidney	1000	IRIS	1/10/2002
Bromodichloromethane	Chronic	2 0E-02	mg/kg/day	1E+00	2 0E-02	mg/kg/day	Kidney	1000	IRIS	1/3/1991
Carbon Tetrachloride	Chronic	7 OE-04	mg/kg/day	1E+00	7 OE-04	mg/kg/day	Liver	1000	IRIS	1/6/1991
Chlorobenzene	Chronic	2 0E-02	mg/kg/day	3 1E-01 4	6 2E-03	mg/kg/day	Liver	1000	IRIS	1/7/1993
Chlorodibromomethane	Chronic	2 0E-02	mg/kg/day	1E+00	2 0E-02	mg/kg/day	Liver	1000	IRIS	1/3/1991
Chloroform	Chronic	1 0E-02	mg/kg/day	2 0E-01 5	2 0E-03	mg/kg/day	Liver	1000	IRIS	10/19/2001
Dibenz(a,h) Anthracene	Chronic	No Data		3 1E-01 6	No Data	-	No Data	No Data	RAIS/IRIS	1/11/2004
Dibenzofuran	Chronic	4 0E-03	mg/kg/day	1E+00	4 0E-03	mg/kg/day	Kidney	10000	RAIS/PPRTV	1/11/2004
Hexachioro-1,3-Butadiene	Chronic	2 0E-04	mg/kg/day	1E+00	2 0E-04	mg/kg/day	Kldney	1000	RAIS/HEAST	1/11/2004
Hexachlorobenzene	Chronic	8 0E-04	mg/kg/day	1E+00	8 0E-04	mg/kg/day	Liver	100	IRIS	1/4/1991
Indeno(1.2.3-cd)Pyrene	Chronic	No Data	-	3 1E-01 2	No Data	-	No Data	No Data	IRIS/RAIS	1/11/2004
2-methylnaphthalene	Chronic	4 00E-03	mg/kg/day	1E+00	4 0E-03	mg/kg/day	Lung	1000	IRIS/RAIS	1/1/2005
Naphthalene	Chronic		mg/kg/day	1E+00	2.0E-02	mg/kg/day	Blood, Liver, Kidney, Nervous System, Reproductive System	3000	IRIS	09/17/1998
Nitrobenzene	Chronic	5 0E-04	mg/kg/day	1E+00	5 0E-04	mg/kg/day	Liver, Kidney	10000	IRIS	1/1/1991
N-Nitrosodi-n-propylamine Pentachlorophenol	Chronic Chronic	No Data 3 0E-02	mg/kg/day	2 5E-01 7	No Data 3 0E-02	- mg/kg/day	No Data Liver, Kidn ey	No Data	IRIS/RAIS IRIS/RAIS	1/11/2004
Tetrachloroethene	Chronic	1 0E-02	mg/kg/day	1E+00	1 0E-02	mg/kg/day	Liver	1000	IRIS	1/3/1998
SHACI KA SSHI FOR FO	C. 1101 HC	. 52-52	g, kg/ddy	,	32-02		Liver, Kidney and Developing			
Irlchloroethene	Chronic	3 0E-04	mg/kg/day	1 5E-01 ⁸	4 5E-05	mg/kg/day	fetus	3000	U S EPA, 2001	1/8/2001

Motes

- 1 Oral absorption efficiencies have been taken from U.S.EPA RAGS E guidance unless otherwise noted. For those chemicals with an absorption efficiency greater than or equal to 0.5, 1.0 has been used as the obsorption efficiency
- 2 Rahman, A. J. A. Sarrowman and A. Rahmhuta. 1986 The influence of bile on the bioavailability of polynuclear aromatic hydrocarbons from the rat intestine. Can. J. Physiol. Pharmacol. 64 1214-1218.

 3 Tethynck, O.A. and J. Belpaire. 1985. Disposition of arafly administered dil(2-ethylhexyl)phitholate and mono(2-ethylhexyl)phitholate in the rat. Arch. Toxicol. 57(4) 226-230.
- 4 ATSDR (Agency for Taxic Substances and Disease Registry) 1990 Toxicological Profile for Chlorobenzene ATSDR/U.S. Public Health Service
- 5 Brown, D.M., P.F. Langely, D. Smith, et al. 1974. Metabolism of Chloroform. L. The metabolism of [14C]-chloroform by different species. Xenobiotica 4 151-163.
- 6 United States Environmental Protection Agency 1995 Supplemental Guidance to RAGS Region 4 Bulletins, Human Health Risk Assessment (Interim Guidance)
- Waste Management Division, Office of Health Assessment http://www.epa.gov/regions/waste/ols/obguid htm
- 7 ATSDR (Agency for Toxic Substances and Disease Registry) 1989 Toxicological Profile for N-Nitrosodi-n-propylamine ATSDR/U.S. Public Health Service.
- 8 Daniel, J.W. 1963. The metabolism of 36CHabelled trichloroethylene and tetrachlorethylene in the rat. Blochem. Pharmocol. 12:795-802.
 U.S.EPA, 2001 Values listed are from trichloroethylene health risk assessment, synthesis and characterization. EPA/600/P-01/002A, August 2001, Draft Report for External Review.
- IRIS Values listed were taken from the EPA's integrated Risk information System
 U.S.EPA, 2004 Values listed are from EPA Region 9 PRGs Table, 10/01/04 (R= route extrapolation, NCEA = Notional Center for Environmental Assessment, H = HEAST)
- U.S.EPA, 2004 Values listed are from EPA Region 9 PRGs Table, 10/01/04 (R™ route extrapolation RAIS - Values listed were taken from the Risk Assessment Information System (December, 2004)
- HEAST Values listed were taken from the EPA's Health Effects Summary Tables (as provided in RAIS database)
 PPRTV Values listed are provisional, in nearly every instance these values are Provisional Peer-Reviewed Taxicity Values (as provided in RAIS database or EPA documents)
- * No data were available to determine target argans/critical effects for oral, inhalation, or other routes of exposure to benzo[b]fluoranthene (RAIS, 2005)
- ** Route extrapolation used to determine RfD as shown on EPA Region 9 PRG table
- Not Applicable

TABLE 4-2 NON-CANCER TOXICITY DATA -- INHALATION MISSOURI ELECTRIC WORKS

		T		T	-	<u> </u>		<u> </u>	
Chemical of Potential	Chronic/ Subchronic	Inhalatic		Extrapolat		Primary Target	Combined Uncertainty/Modifying		et Organ(s)
Concern		Value '	Units	Value	Units	Organ(s)	Factors	Source(s)	Date(s) (MM/DD/YYYY)
1,1,2,2-Tetrachloroethane	Chronic	No Data		No Data		No Data	No Data	IRIS/RAIS	
1,1,2-Trichloroethane	Chronic	No Data		No Data		No Data	No Data	IRIS/RAIS	
1,1-Dichloroethane	Chronic	5 00E-01	mg/m3	1 43E-01	mg/kg-d	Kidney	1000	RAIS/HEAST*	11/01/04
1,2 dichloroethene (cls)	Chronic	No Data	<u>-</u>	No Data	-	No Data	No Data	IRIS/RAIS	-
1,2-dichloroethene (trans)	Chronic	No Data	-	No Data	-	No Data	No Data	IRIS/RAIS	-
1,2,4-trichlorobenzene	Chronic	4 00E-03	mg/m3	1 14E-03	mg/kg-d	Liver	1000	PPRTV, 2002	10/01/92
1,2 Dichloroethane	Chronic	4 90E-03	mg/m3	1 40E-03	mg/kg-d	No Data	No Data	U S EPA, 2004 (NCEA)	10/01/04
1,2-Dichloropropane	Chronic	4 00E-03	mg/m3	1.14E-03	mg/kg-d	Nasaí	300	IRIS	12/01/91
1.3-Dichlorobenzene	Chronic	No Data	-	No Data		No Data	No Data	IRIS/RAIS	
1,4-Dichlorobenzene	Chronic	8 00E-01	mg/m3	2 30E-01	mg/kg-d	Liver	100	IRIS	11/01/96
2,4,6-Trichlorophenol	Chronic	Not Derived	11.9/11.0	Not Derived	mg/kg-u				
2,4,6-Ilicinorophenor	CHONE	Noi Denved		Noi Delived	-	Not Known	Not Known	IRIS	04/24/91
2,4-Dinitrotoluene	Chronic	No Data	-	No Data	-	No Data	No Data	IRIS/RAIS	-
2,6-Dinitrotoluene	Chronic	No Data	-	No Data	-	No Data	No Data	IRIS/RAIS	-
2-Chlorophenol	Chronic	No Data	-	No Data	-	No Data	No Data	IRIS/RAIS	•
3,3-Dichlorobenzidine	Chronic	Not Derived		Not Derived	-	Not Known	Not Known	IRIS	09/12/91
4,6-Dinitro-2-Methyl Phenol	Chronic	No Data	-	No Data	-	No Data	No Data	IRIS/RAIS	11/01/04
Aroclor-1016	Chronic	No Data	•	No Data	-	No Data	No Data	IRIS/RAIS	-
Aroclor-1221	Chronic	No Data	_	No Data	-	No Data	No Data	IRIS/RAIS	-
Aroclor-1232	Chronic	No Data	-	No Data		No Data	No Data	IRIS/RAIS	_
Aroclor-1242	Chronic	No Data		No Data	_	No Data	No Data	IRIS/RAIS	-
Aroclor-1248		-			<u> </u>				
	Chronic	No Data		No Data		No Data	No Data	IRIS/RAIS	····
Aroclor-1254	Chronic	No Data	-	No Data	-	No Data	No Data	IRIS/RAIS	-
Aroclor-1260	Chronic	No Data		No Data	-	No Data	No Data	IRIS/RAIS	•
Benzene	Chronic	3 00E-02	mg/m3	8 57E-03	mg/kg-d	Bone Marrow	300	IRIS	04/17/03
Benz(a)anthracene	Chronic	No Data	-	No Data	-	No Data	No Data	IRIS/RAIS	01/01/05
Benzo(a)pyrene	Chronic	No Data	-	No Data		No Data	Not Known	IRIS/RAIS	•
Benzo(b)fluoranthene	Chronic	No Data		No Data	-	No Data***	No Data	IRIS/RAIS	01/01/05
Benzo(k)fluoranthene	Chronic	No Data	-	No Data	<u>-</u>	No Data	No Data	IRIS/RAIS	-
bis(2-Chloroethyl) Ether	Chronic	Not Derived		No Data	_	No Data	No Data	IRIS/RAIS	10/01/91
bis(2-Chlorolsopropyl) Ether	Chronic	No Data		No Data	-	No Data	No Data	IRIS/RAIS	- 10/01/71
bis (2-ethylhexyl) phthalate	Chronic	No Data	-	No Data	-	No Data	No Data	IRIS/RAIS	-
D	Chanda	No Dota		N - D - 4 -		N- D-4-	N- D-4-	IDIC (D A IC	
Bromodichloromethane	Chronic	No Data		No Data	-	No Data	No Data	IRIS/RAIS	-
Carbon Tetrachloride	Chronic	No Data		No Data	-	No Data	No Data	IRIS/RAIS	-
Chlorobenzene	Chronic	6 00E-02	mg/m3	1 70E-02	mg/kg-d	Uver	Not Known	U S EPA, 2002	10/01/02
Chlorodibromomethane	Chronic	No Data		No Data	-	No Data	No Data	IRIS/RAIS	-
Chloroform	Chronic	No Data		No Data	-	No Data	No Data	IRIS/RAIS	-
Dibenz(a,h) Anthracene	Chronic	No Data		No Data	-	No Data	No Data	IRIS/RAIS	-
Dibenzofuran Hexachloro-1,3-Butadiene	Chronic Chronic	No Data No Data	_	No Data No Data	-	No Data	No Data	IRIS/RAIS IRIS/RAIS	-
			_		******				
Hexachlorobenzene	Chronic	No Data No Data	-	No Data No Data	-	No Data	No Data No Data	IRIS/RAIS IRIS/RAIS	<u>.</u>
								IRIS/RAIS	-
2-methylnaphthalene	Chronic	No Data		No Data	-	No Data Blood, GIT, Eye, Liver, Kidney,	No Data		-
Naphthalene 	Chronic	3 00E-03	mg/m3	8 57E-04	mg/kg-d	Nervous System Blood, Adrenal, Kldney and	3000	iris/rais	09/17/98
Nitrobenzene	Chronic	2 00E-03	mg/m3	5 71E-04	mg/kg-d	Liver	1E+04	RAIS/HEAST*	11/01/04
N-Nitrosodi-n-propylamine Pentachlorophenol	Chronic Chronic	No Data No Data	-	No Data No Data	-	No Data No Data	No Data	IRIS/RAIS IRIS/RAIS	-
		= .							05/04/00
Tetrachloroethene	Chronic	5 00E-01	mg/m3	1 40E-01	mg/kg-d	Liver Central Nervous System, Liver	30 B 300	NCEA, 2002	05/24/02
Trichloroethene	Chronic	4 00E-02	mg/m3	1 14E-02	mg/kg-d	and Endocrine system	1000	U S EPA, 2001	08/01/01
Vinyl Chloride	Chronic	1 00E-01	mg/m3	2.86E-02	mg/kg-d	Liver	30	IRIS/RAIS	08/07/00
Notes.									

- 1 If RfC not available, calculated assuming 70 kg adult breathes 20 m3 air/day
- U S EPA, 2001 Trichloraethylene health risk assessment synthesis and characterization EPA/600/P-01/002A, August 2001, Draft Report for External Review
- U S EPA, 2004 Values isted are from EPA Region 9 PRGs Table, 10/01/04 (NCEA = National Center for Environmental Assessment, H = HEAST)
- USEPA, 2004b Provisional RfC taken from EPA Air Toxics Web Site (November, 2004) www epa gov/ttn/atw IRIS - Values listed were taken from the EPA's integrated Risk information System
- RAIS Values listed were taken from the Risk Assessment Information System (December, 2004)
- HEAST Values listed were taken from the EPA's Health Effects Summary Tables (as provided in RAIS database)
- PPRTV Values listed are provisional. In nearly every instance these values are Provisional Peer-Reviewed Toxicity Values (as provided in RAIS database) NCEA, 2002 Health Assessment Document for Tetrachloroethylene Final Report U.S. Enviroenmental Protection Agency, D.C., EPA/600/8-82/005F
- * Considered to be an adequate provisional value identified in EPA documents, but is subject to review (RAIS, 2004)
- **The available data do not permit determination of primary target organs (RAIS, 2005)
- *** No data were available to determine target organs/critical effects for oral, Inhalation, or other routes of exposure to benzo(b)fluoranthene



TABLE 4-3 CANCER TOXICITY DATA -- ORAL/DERMAL MISSOURI ELECTRIC WORKS

Chemical	0	on Plane Pares	Oral Absorption		d Cancer	Weight of Evidence/		Oral CSF
of Potential		er Slope Factor	Efficiency for		or for Dermal	Cancer Guideline		
Concern	Value	Units	Dermal (1)	Value	Units	Description	Source(s)	Date(s) (MM/DD/YYYY)
1,1,2,2-Tetrachloroethane	2 0E-01	1/mg/kg/day	1E+00	2 0E-01	1/mg/kg/day	С	IRIS	12/3/2002
1,1,2-Trichloroethane	5 7E-02	1/mg/kg/day	1E+00	5 7E-02	1/mg/kg/day	С	IRIS	2/1/1994
1,1-Dichloroethane	No Data	i - i	1E+00	No Data	-	c	IRIS	12/01/96
cls 1,2-dichloroethene	NA] -	1E+00	NA	- "	D	IRIS	02/01/95
trans 1,2-dichloroethene	NA.	- 1	1E+00	NA .	-	j D	IRIS/RAIS	1/1/2005
1,2,4-trichlorobenzene	NA	-	1E+00	NA	-	D	IRIS	03/01/91
1,2-Dichloroethane	9 1E-02	1/mg/kg/day	1E+00	9 1E-02	1/mg/kg/day	B2	IRIS	1/1/1991
1,2-Dichloropropane	6.8E-02	1/mg/kg/day	1E+00	6 8E-02	1/mg/kg/day	B2	HEAST/RAIS	11/1/2004
1,3-Dichlorobenzene	NA.	- 1	1E+00	NA .	-	D	IRIS	09/01/90
1,4-Dichlorobenzene	2 4E-02	1/mg/kg/day	1E+00	2 4E-02	1/mg/kg/day	c	RAIS/HEAST	11/1/2004
2,4,6-Trichlorophenol	1 1E-02	1/mg/kg/day	1 E+00	1 1E-02	1/mg/kg/day	B2	IRIS	2/1/1994
2,4-Dinitrotoluene	6.8E-01	1/mg/kg/day	1E+00	8 0E-01	1/mg/kg/day	B2	IRIS/RAIS	1/1/2005
2,6 Dinitrotoluene	6 7E+00	1/mg/kg/day	1E+00	6 7E+00	1/mg/kg/day	B2	IRIS/RAIS	9/1/1990
2-Chlorophenol	No Data	,,,,g,,dd,	1E+00	No Data	-	Not Known	IRIS	07/01/93
	4 5E-01	1/mg/kg/day	1E+00	4 5E-01	1/mg/kg/day	82	- IRIS	7/1/1993
3,3-Dichlorobenzidine	No Data	i //rig/kg/ddy	1E+00	No Data	i/ilig/xg/ddy	Not Known	RAIS/IRIS	11/1/2004
4.6-Dinitro-2-Methyl Phenol						,		
Aroclor-1016	4 0E-01	1/mg/kg/day	1E+00	4 0E-01	1/mg/kg/day	Not Known	IRIS/RAIS	10/01/96, 01/01/05
Aroclor-1221	4 0E-01	1/mg/kg/day	1E+00	4 0E-01	1/mg/kg/day	B2	IRIS/RAIS	1/6/1997, 01/01/05
Aroclor-1232	4 0E-01	1/mg/kg/day	1E+00	4 0E-01	1/mg/kg/day	B2 ~~	IRIS/RAIS	1/6/1997, 01/01/05
Aroclor-1242	4 0E-01	1/mg/kg/day	1E+00	4 0E-01	1/mg/kg/day	B2	IRIS/RAIS	1/6/1997, 01/01/05
Aroclor-1248	4 0E-01	1/mg/kg/day	1E+00	4 0E-01	1/mg/kg/day	82	IRIS/RAIS	1/6/1997, 01/01/05
Arockir-1254	4 0E-01	1/mg/kg/day	1E+00	4 0E-01	1/mg/kg/day	B2	IRIS/RAIS	1/6/1997, 01/01/05
Aroclor-1260	4 0E-01	1/mg/kg/day	1E+00	4 0E-01	1/mg/kg/day	B2	IRIS/RAIS	1/6/1997.01/01/05
Benzene	5 5E-02	1/mg/kg/day	1E+00	5 5E-02	I/mg/kg/day	^	IRIS/RAIS_	01/19/00_
Benz(a)anthracene	7 3E-01	1/mg/kg/day	3 1E-01 2	2 3E-01	1/mg/kg/day	B2	IRIS/RAIS	1/1/2005
Benzo(a)pyrene	7.3E+00	1/mg/kg/day	3 1E-01 2	2 3E+00	1/mg/kg/day	B2	IRIS/RAIS	1/1/2005
Benzo(b)fluoranthene	7 3E-01	1/mg/kg/day	3 1E-01 2	2 3E-01	1/mg/kg/day	B2	IRIS/RAIS	1/1/2005
Benzo(k)fluoranthene **	7.3E-02	1/mg/kg/day	3 1E-01 2	2 3E-02	1/mg/kg/day	B2	IRIS/RAIS	3/1/1994
bis (2-ethylhexyl) phthalate	1 4E-02	1/mg/kg/day	1E+00	1 4E-02	1/mg/kg/day	B2	IRIS	02/01/93
bls(2-Chloroethyl) Ether	1 1E+00	1/mg/kg/day	1E+00	1 1E+00	i/mg/kg/day	B2	IRIS	1/2/1994
bls(2-Chlorolsopropyl) Ether	No Data	1 - 1	1 9E-01 3	No Data	-	Not Known	IRIS	11/1/2004
Bromodichloromethane	6 2E-02	1/mg/kg/day	1E+00	6 2E-02	1/mg/kg/day	В2	IRIS	1/3/1993
Carbon Tetrachloride	1 3E-01	1/mg/kg/day	1E+00	1 3E-01	1/mg/kg/day	B2	iris	6/1/1991
Chlorobenzene	NA.		3 1E-01 4	NA	-	D	IRIS	03/01/91
Chlorodibromomethane	8 4E-02	1/mg/kg/day	1E+00	8 4E-02	1/mg/kg/day	С	IRIS	1/1/1992
Chloroform	No Data		2 0E-01 5	No Data	-	B2	IRIS	10/19/2001
Dibenz(a,h) Anthracene **	7.3E+00	1/mg/kg/day	3 1E-01 4	7 3E+00	1/mg/kg/day	B2	iris	3/1/1994
Dibenzofuran	NA.	_	1E+00	NA .	-	D	IRIS	10/1/1990
Hexachloro-1,3-Butadiene	7.8E-02	1/mg/kg/day	1E+00	7.8E-02	1/mg/kg/day	c	IRIS	4/1/1991
	1 6E+00	1/mg/kg/day	1E+00	1 6E+00	1/mg/kg/day	B2	IRIS	11/1/1995
Hexachlorobenzene Indeno(1,2,3-cd)Pyrene **	7.3E-01	1/mg/kg/day	3 1E-01 2	2 3E-01	1/mg/kg/day	B2 B2	IRIS/RAIS	3/1/1994
• • • •	No Data	[i/ing/kg/ddy]	1E+00	No Data	i/ilig/kg/ddy	Not Known	IRIS/RAIS	12/22/2003
2-Methylnaphthalene Naphthalene	ł		1E+00	Not Dervied		C	IRIS	09/17/98
	Not Derived			NA NA		D	-	t
Nitrobenzene		1/00/2/16/2/	1E+00		1/malkalder		IRIS IRIS	2/1/1994 07/01/93
N-Nitrosodi-n-propylamine Pentachlorophenol	7 05+00	1/mg/kg/day	2 5E-01 '	1 8E+00	1/mg/kg/day	B2		
Pentachlorophenol	1.26-01	1/mg/kg/day	1E+00	1.2E-01	1/mg/kg/day	B2	IRIS/RAIS	1/1/2005
Tetrachloroethene	5 4E-01	1/mg/kg/day	1E+00	5 4E-01	1/mg/kg/day	C - B2 continuum	U.S EPA, 2004	10/01/04
Trichloroethene 9	4 0E-01	1/mg/kg/day	1 5E-01 B	6 0E-02	1/mg/kg/day	Highly Likely	U S EPA, 2001	08/01/01
Trichloroethene	2 0E-02	1/mg/kg/day	1 5E-01	3 OE-03	1/mg/kg/day	Highly Likely	U S EPA, 2001	08/01/01
Trichloroethene	6 0E-03	1/mg/kg/day	1 5E-01	9 0E-04	1/mg/kg/day	C- B2 continuum	U S EPA, 1987	01/01/87
Vinyl Chloride	7 2E-01	1/mg/kg/day	1E+00	7.2E-01	1/mg/kg/day	A	IRIS	8/7/2000

- 1 Oral absorption efficiencies have been taken from U.S EPA RAGS E guidance, unless otherwise noted. For those chemicals with an absorption efficiency greater than or equal to 0.5, 1.0 has been used as the absorption efficiency
- 2 Rahman, A., J.A. Barrowman and A. Rahlmtula. 1986 The influence of bile on the bloavallability of polynuclear aromatic hydrocarbons from the rat intestine. Can. J. Physiol. Pharmacol. 64 1214-1218
- 3 Tertynck, O.A. and J. Beipaare 1985 Disposition of orally administered dli(2-ethylhexyl)phthalate and mono(2-ethylhexyl)phthalate in the rat. Arch. Toxicol. 57(4):226-230
- 4 ATSDR (Agency for Toxic Substances and Disease Registry) 1990 Toxicological Profile for Chlorobenzene ATSDR/U.S. Public Health Service
- 5 Brown, D.M., P.F. Langely, D. Smith, et al. 1974. Metabolism of Chloroform. I The metabolism of [14C]-chloroform by different species. Xenoblotica 4 151-163.
- 6 United States Environmental Protection Agency 1995 Supplemental Guidance to RAGS Region 4 Bulletins, Human Health Risk Assessment (Interim Guidance)
- Waste Management Division, Office of Health Assessment http://www.epa.gov/region4/waste/ots/otsguld.htm
- 7 ATSDR (Agency for Toxic Substances and Disease Registry) 1989 Toxicological Profile for N-Nitrosodi-n-propylamine ATSDR/U S Public Health Service 8 Daniel, J.W. 1963 The metabolism of 36CHabelled trichloroethylene and tetrachlorethylene in the rat. Biochem. Pharmocol. 12.795-802
- 9 Three slope factors have been quoted for TCE, the U.S.EPA, 1987 value and the range of values quoted in U.S.EPA, 2001
- NA Not Applicable
- B2 Probabate Human Caranoger
- C-Possible Human Carcinogen
- U.S. EPA. 1987. Addendum to the Health Assessment Document for Trichloroethylene. Updated Carcinogenicity Assessment for Trichloroethylene. External Review Draft. Office of Health and Environmental Assessment, Office of Research and Development, Washington, DC. EPA/600/8-82/006FA, P887-228045
- U S EPA, 2001 Trichloroethylene health risk assessment, synthesis and characterization, EPA/600/P-01/002A, August 2001, Draft Report for External Review
- U S EPA, 2002 EPA Region 9 PRGs Table, 10/01/02 U.S EPA, 2003 OSWER Directive 9285 7-75, June 12, 2003
- U.S. EPA, 2004 EPA Region 9 PRG Table, 10/01/04
- IRIS Values listed were taken from the EPA's integrated Risk information System RAIS - Values fisted were taken from the Risk Assessment Information System (December, 2004)
- HEAST Values listed were taken from the EPA's Health Effects Summary Tables (as provided in RAIS database)
- PPRTV Values listed are provisional in nearly every instance these values are Provisional Peer-Reviewed Toxicity Values (as provided in RAIS database)
- The Oral Cancer Slope Factor was derived as described in Supplemental Guidance from RAGS Region 4 Bulletins, Human Health Risk Guidance (November 1995) ** Oral Cancer Stope Factor Calculated using Toxicity Equivalency Factor (TEF) methodology for carcinogenic polycyclic aromatic hydrocarbons (PAHs)
- as described in Supplemental Assessment (Interim Guidance from RAGS Region 4 Bulletins, Human Health Risk Assessment
- (Interim Guidance) (November 1995)
- Not Applicable



TABLE 4-4 CANCER TOXICITY DATA -- INHALATION MISSOURI ELECTRIC WORKS

Chemical of Potential	Un	it Risk	Inhalation Co	ancer Slope Factor	Weight of Evidence/ Cancer Guideline	Unit Risk . Inhalation CSF			
Concern	Value	Units	Value	Units	Description	Source(s)	Date(s) (MM/DD/YYYY)		
1,1,2,2-Tetrachloroethane	5.8E-02	1/mg/m3	2.03E-01 **	1/mg/kg/day	С	IRIS	02/01/1994		
1,1,2-Trichloroethane	1.6E-02	1/mg/m3	5.70E-02	1/mg/kg/day	С	IRIS	02/01/1994		
1,1-Dichloroethane	No Data	-	No Data	-	С	iRIS	12/01/1996		
1,2-dichloroethene (cis)	NA	-	NA	-	D	IRIS	02/01/1995		
1,2-dichloroethene (trans)	No Data	-	No Data	-	D	IRIS	11/01/2004		
1,2,4-trichlorobenzene	NA	-	NA	-	D	IRIS	03/01/1991		
1,2-Dichloroethane	2.6E-02	1/mg/m3	9.1E-02 **	1/mg/kg/day	B2	IRIS	01/01/1991		
1,2-Dichloropropane	No Data	-	No Data	•	B2	IRIS/RAIS	11/01/2004		
1,3-Dichlorobenzene	NA	-	NA		D	RAIS	09/01/1990		
1,4-Dichlorobenzene	6.3E-03	1/mg/m3	2.20E-02	1/mg/kg/day	С	U.S.EPA, 2002	10/01/1992		
2,4,6-Trichlorophenol	3.1E-03	1/mg/m3	1.09E-02 **	1/mg/kg/day	B2	IRIS	02/01/1994		
2,4-Dinitrotoluene	No Data	-,,,,,,,,,,,	No Data	-	B2	IRIS/RAIS	01/01/2005		
2,6-Dinitrotoluene	No Data	_	No Data	-	B2	IRIS	09/01/1990		
2-Chlorophenol	No Data		No Data		Not Known	IRIS	07/01/1993		
3.3-Dichlorobenzidine	No Data	_	No Data		B2	IRIS	07/01/1993		
4,6-Dinitro-2-Methyl Phenol	No Data		No Data		Not Known	IRIS/RAIS	11/01/2004		
Aroclor-1016	1.0E-01	1/mg/m2	4E-01 **	1/mg/kg/day	Not Known	IRIS	10/01/1996, 01/01/2005		
Aroclor-1221	1.0E-01	1/mg/m3	4E-01 **	1/mg/kg/day	B2	IRIS	06/01/1997		
Aroclor-1232	1.0E-01	1/mg/m3	4E-01 **	1/mg/kg/day	B2	IRIS	06/01/1997		
Aroclor-1242	1.0E-01	1/mg/m3	4E-01 **	1/mg/kg/day	B2	IRIS	06/01/1997		
Aroclor-1248	1.0E-01	1/mg/m3	4E-01 **	1/mg/kg/day	B2	IRIS	06/01/1997		
Arockir-1254	1.0E-01		4E-01 **	1/mg/kg/day	B2	IRIS	06/01/1997		
Aroclor-1260	1.0E-01	1/mg/m3	4E-01 **		B2	IRIS			
		1/mg/m3	2.73E-02	1/mg/kg/day 1/mg/kg/day		IRIS	06/01/1997		
Benzene	7.8E-03	1/mg/m3	 		A		01/19/2000		
Benz(a)anthracene	No Data	1/	3.08E-01	1/mg/kg/day	B2	IRIS/RAIS	01/01/2005		
Benzo(a)pyrene	8.8E-01	1/mg/m3	3.08E+00	1/mg/kg/day	B2	IRIS/RAIS	01/01/2005		
Benzo(b)fluoranthene	8.8E-02 8.8E-02	1/mg/m3	3.08E-01	1/mg/kg/day	B2	IRIS/RAIS RAIS	01/01/2005		
Benzo(k)fluoranthene ***	3.3E-01	1/mg/m3	3.08E-01 **	1/mg/kg/day	B2	IRIS	01/11/2004		
bis(2-Chloroethyl) Ether	No Data	1/mg/m3	1.16E+00	1/mg/kg/day	B2	IRIS	02/01/1994 11/01/2004		
bis(2-Chloroisopropyl) Ether		-	No Data		Not Known				
bis (2-ethylhexyl) phthalate	No Data No Data	-	No Data		B2	IRIS	02/01/1993		
Bromodichloromethane	1.5E-02	-	No Data	1 / 11 /	B2	IRIS/RAIS	03/01/1993		
Carbon Tetrachloride		1/mg/m3	5.2E-02 **	1/mg/kg/day	B2		06/01/1991		
Chlorobenzene	NA No Dete		NA NA	-	D	IRIS	03/01/1991;		
Chlorodibromomethane	No Data	-	No Data	1 (() - ()	С				
Chloroform	2.3E-02	1/mg/m3	8.10E-02	1/mg/kg/day	B2	IRIS IRIS/RAIS	10/19/2001		
Dibenz(a,h)Anthracene ***	8.8E-02	1/mg/m3	3.08E-01 **	1/mg/kg/day	B2	IRIS	03/01/2004		
Dibenzofuran	NA 0.05.00	<u>-</u>	NA NA	-	D	<u> </u>	10/01/1990		
Hexachloro-1,3-Butadiene	2.2E-02	1/mg/m3	7.7E-02 **	1/mg/kg/day	С	IRIS	04/01/1991		
Hexachlorobenzene	4.6E-01	1/mg/m3	1.61E+00 **	1/mg/kg/day	B2	IRIS	11/01/1996		
Indeno(1,2,3-cd)Pyrene ***	8 8E-02	1/mg/m3	3.08E-01 **	1/mg/kg/day	B2	RAIS	11/01/2004		
Methylnaphthalene	No Data	-	No Data		Not Known	IRIS/RAIS	12/22/2003		
Naphthalene	Not Derived	-	Not Derived	•	С	IRIS	11/01/2004		
Nitrobenzene	NA		NA NA	•	D	IRIS	02/01/1995		
N -Nitrosodı-n-propylamine	No Data	-	No Data	-	B2	IRIS	11/01/2004		
Pentachlorophenol	No Data	-	No Data	-	B2	IRIS/RAIS	01/01/2005		
Tetrachloroethene	5.9E-03	1/mg/m3	2.10E-02	1/mg/kg/day	C -B2 Continuum	U.S.EPA, 2003	04/25/2003		
Trichloroethene	5 7E-03	1/mg/m3	2.00E-02	1/mg/kg/day	Highly Likely	U.S.EPA, 2001	08/01/2001		
Trichloroethene	1.7E-03	1/mg/m3	6.00E-03	1/mg/kg/day 1/mg/kg/day	C -B2 Continuum Highly Likely	U.S.EPA, 1987 U.S.EPA, 2001	01/01/1987 08/01/2001		
Trichloroethene 1	1.1E-01	1/mg/m3	4.00E-01						

Notes

- NA Not Applicable
- A -Human Carcinogen
- B2 Probabale Human Carcinogen
- C- Possible Human Carcinogen
- D- Not Human Carcinogen
- IRIS Values listed were taken from the EPA's integrated Risk information \mbox{System}
- RAIS Values listed were taken from the Risk Assessment Information System (December, 2004)
- HEAST Values listed were taken from the EPA's Health Effects Summary Tables (as provided in RAIS database)
- PPRTV Values listed are provisional in nearly every instance these values are Provisional Peer-Reviewed Toxicity Values (as provided in RAIS database)
- 1 Three slope factors have been quoted for TCE, the U S EPA, 1987 value and the range of values quoted in U S EPA, 2001 Assessment, Office of Research and Development, Washington, DC EPA/600/8-82/006FA, PB87-228045
- U.S. EPA, 2001 Trichloroethylene health risk assessment, synthesis and characterization, EPA/600/P-01/002A, August 2001
- USEPA, 2002 EPA Region 9 PRGs Table, 10/01/02
- U S.EPA, 2003 OSWER Directive 9285 7-74, April 25, 2003
- * This value was withdrawn by NCEA and is now being reassessed for IRIS which automatically flags further use of any provisional cancer or non-cancer
- assessments" if this chemical is identified as a risk driver, the risk assessor should consult The EPA Superfund Technical Support Center ** The Inhalation Slope Factor was calculated from inhalation unit risk as described in Supplemental Guidance from RAGS Region 4 Bulletins, Human Health Risk Guidance) (November 1995)
- *** Calculated using Toxicity Equivalency Factor (TEF) methodology for carcinogenic polycyclic aromatic hydrocarbons (PAHs) as described in Supplemental
- Assessment (Interim Guidance from RAGS Region 4 Bulletins, Human Health Risk Assessment (Interim Guidance) (November 1995)

TABLE 6-1
GROUNDWATER SOURCE (ON-SITE) CONCENTRATION STATISTICS
AUSSOURI ELECTRIC WORKS

			F			<u> </u>	,				-			<u> </u>	1		1	<u> </u>		
		Benzene			Chloroberzene			1,3-DCB	-		1,4-DCB		:	Naphthalene			2-Chlorophenol			1,2,4-TCB
Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)
MW-12	12/12/02	26	MW-12	12/12/02	3000	MW-12	11/14/02	5	MW-12	11/14/02	5	MW-3	06/20/00	5	MW-12	11/14/02	5	MW-4	09/26/00	5
MW-12(DUP)	02/05/03	30	MW-12(DUP)	02/05/03	2000	MW-12(DUP)	12/12/02	98	MW-12(DUP)	12/12/02	120	MW-3	04/25/01	5	MW-12	12/12/02	5	MW-4	04/24/01	41
MW-12	05/07/03	19	MW-12	05/07/03	2000 1800	MW-12(DUP)	02/05/03	100 37	MW-12 MW-12(DUP)	02/05/03	100	MW-3	07/26/01	5	MW-12	02/05/03	3	MW-4	07/25/01	5
MW-12 MW-12	08/13/03 10/28/03	51 42	MW-12 MW-12	08/13/03 10/28/03	2000	MW-12(D0F)	08/13/03	71	MW-12	08/13/03	77	MW-3	10/24/01 01/23/02	5	MW-12(DUP) MW-12	05/07/03	90	MW-4(DUP)	10/25/01	18 16
MW-12	02/04/04	54	MW-12	02/04/04	2100	MW-12	10/28/03	67	MW-12	10/28/03	72	MW-3	05/08/02	5	MW-12	10/28/03	4.5	MW-4	05/08/02	30
MW-12	05/19/04	53	MW-12	05/19/04	1500	MW-12	02/04/04	51	MW-12	02/04/04	51	MW-3	08/07/02	5	MW-12	02/04/04	5.5	MW-4	08/07/02	5
MW-12(DUP)	08/11/04	62	MW-12	08/11/04	2700	MW-12	05/19/04	54	MW-12	05/19/04	50	E-WM	10/31/02	5	MW-12	05/19/04	2.1	MW-4	10/31/02	5
MW-12	11/17/04	83	MW-12(DUP)	11/17/04	3,200	MW-12(DUP)	08/11/04	68 55	MW-12(DUP)	08/11/04	76	MW-3	02/05/03	5	MW-12	08/11/04	3.5	MW-4	02/04/03	20
· .			1			MW-12(DUP)	11/17/04	33	MW-12(DUP)	11/17/04	64	MW-3	05/06/03	8.7	MW-12(DUP)	11/17/04	3.5	MW-4	05/06/03 08/12/03	7.6
j												MW-3	10/28/03	5			Ī	MW-4(DUP)	10/28/03	5.8
				1					1			MW-3	02/03/04	4.7	1	ļ	ì	MW-4(DUP)	02/03/04	45
				Į i		ļ				ļ l		MW-3	05/19/04	5]	į	Į.	MW-4	05/18/04	41
	-											MW-3	08/11/04	5	4			MW-4	08/11/04	11
												MW-3	11/17/04	5	-			MW-4 MW-7	11/16/04	21 40
																		MW-7	04/25/01	24
						[1]							1	MW-7	07/26/01	5
			Į.		1				l .	1			ļ	Į.	l	Į.	Ļ	MW-7	10/25/01	5
										1							ļ	MW-7	01/23/02	5
						1			l							[MW-7	05/07/02 08/07/02	16 28
							1									1		MW-7	10/31/02	<u>&</u>
										1			ľ				l	MW-7	02/05/03	15
					ļ	ļ	ļ .	ļ	Į.	ļ .			ļ.	ļ		<u> </u>		MW-7	05/05/03	51
													ŀ					MW-7	08/13/03	62
														1		İ		MW-7	10/29/03	16 13
														1		İ		MW-7	02/04/04	21
					1				ŀ					1				MW-7	08/11/04	36
	\		1	ł		ł	1	}		1			1	1	1	1	1	MW-7	11/16/04	25
	:			1]	l		1		MW-10	06/20/00	23
				ľ											ł	ĺ		MW-10	04/24/01	31
]		l								MW-10	07/24/01 10/25/01	31 28
	1													l				MW-10	01/22/02	18
	ŀ															1		MW-10	05/08/02	10
]					<u> </u>					MW-10	08/07/02	13
					1											1		MW-10	10/31/02	12
	ľ															1		MW-10	02/04/03	7.1
					i	1				1							1	MW-10	08/12/03	4.1
	`		1	1		1	1		1	1		1		ì	Ì	ì		MW-10	10/27/03	3.5
						İ												MW-10	02/02/04	2.6
			1	1	1	1	1	1	1	}			}	1		1	1	MW-10	05/18/04	5
			1	1				1	I					1	1		1	MW-10 MW-10	08/09/04	<u>5</u>
			1		1				1					1			1	MW-12	11/14/02	
]		1	1	1		1	1	1] i		1	1	Ì		1	1	MW-12(DUP)	12/12/02	30
				1	1		1	1	1				i			İ	1	MW-12	02/05/03	26
								1	i	1		1		Ī		1	1	MW-12	05/07/03	5
				1				l	1]				1		1	1	MW-12 MW-12	08/13/03 10/28/03	16
			1	1	1								[1		ľ	I	MW-12	02/04/04	11
1]]	1				}	1)		1		1	1	MW-12	05/19/04	13
	j :			1	1		1	1						1		1	ļ	MW-12	08/11/04	14
				1	1	İ		1								1	}	MW-12	11/17/04	14
ļ	n		 	ــــــــــــــــــــــــــــــــــــــ	- •	 	1	10	 	<u> </u>	10	ļ	L	16	 		10	 	<u> </u>	58
	necah .	46.667	1		2255.556	1		60.600000	1		65.800000			5.213	1		4.610000	1	ŀ	17.684483
	max	83]		3200]		100]		120]		9]		9]	Ì	62
	d Deviation	19.874607	3		574.697988	4		27.829640	4		31.734314			0.933006	1		1.882345]	Ţ.	13.384762
	5 UCL ribution	58.985929 Normal	-		2611.781726 Normal	1		76.732319 Normal	1		84.195784 Normal	1		5 621 402 Normal	-		5.701160 Normal	 	ŀ	25.345271 Non-parametric
	mendation	Siudent's-t	1		Sludeni's-f	1 _		Student's-t	1 .		Student's-t	1		Student's-1	1_		Student's-f	1	 	95% Chebyshev (Mean, Sd)
												-								

^{2. &}lt;u>Underlined</u> result represents below reporting detection limit (RDL) - 1/2 RDL used as reported concentration

³ Highest concentration for each duplicate sample was selected and included in the statistical analyses

TABLE 6-1
GROUNDWATER SOURCE (ON-SITE) CONCENTRATION STATISTICS
MISSOURI ELECTRIC WORKS

		1,1-DCA			PCE			TCE			1,2-DCE, Total			Chloroform			N-Nilrosodi-n- propylamine
Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)
MW-4	09/26/00	56	MW-4	09/26/00	2.5	MW-10	06/20/00	2.5	MW-11	06/22/00	2.5	M2M-1	04/25/01	2.5	MW-12	11/14/02	5
MW-4	04/24/01	19	MW-4	04/24/01	2.5	MW-10	04/24/01	72	MW-11	04/26/01	2.5	WSW-1	07/24/01	2.5	MW-12	12/12/02	5
MW-4	07/25/01	8.8	MW-4	07/25/01	2.5	MW-10	07/24/01	79	MW-11	07/25/01	2.5	WSW-1	10/23/01	2.5	MW-12	02/05/03	8
MW-4(DUP)	10/25/01	13	MW-4	10/25/01	25	MW-10	10/25/01	5.9	MW-11	10/24/01	2.5	WSW-1	01/23/02	2.5	MW-12	05/07/03	5
MW-4	01/23/02 05/08/02	15 24	MW-4	01/23/02 05/08/02	2.5 3	MW-10 MW-10	01/22/02 05/08/02	93	MW-11	01/23/02 05/09/02	2.5	W\$W-1	10/30/02	2.5	MW-12	08/13/03	5
MW-4	08/07/02	17	MW-4	08/07/02	8.6	MW-10	08/07/02	12	MW-11	08/08/02	8.0	WSW-1	08/13/03 10/27/03	2.5 2.5	MW-12	10/28/03 02/04/04	
MW-4	10/31/02	7.5	MW-4	10/31/02	2.4	MW-10	10/31/02	12	MW-11(DUP)	10/31/02	64	WSW-1	12/18/03	23	MW-12	05/19/04	5
MW-4	02/04/03	18	MW-4	02/04/03	2	MW-10	02/04/03	97	MW-11	02/05/03	3	WSW-1	02/03/04	2.5	MW-12	08/11/04	5
MW-4	05/06/03	9.8	MW-4	05/06/03	2.5	MW-10	05/06/03	87	MW-11	05/06/03	2.5	WSW-1	05/18/04	2.5	MW-12	11/17/04	5
MW-4	08/12/03	18	MW-4	08/12/03	4.4	MW-10	08/12/03	56	MW-11	08/13/03	3.8	WSW-1	08/09/04	2.5			
MW-4	10/28/03	15	MW-4(DUP)	10/28/03	4.9	MW-10	10/27/03	4,4	MW-11	09/14/03	89	WSW-1	11/15/04	1.3]		
MW-4	02/03/04	22	MW-4	02/03/04	2.5	MW-10	02/02/04	3.8	MW-11	10/28/03	98	1			1		
MW-4	05/18/04	16	MW-4	05/18/04	2.5 4.2	MW-10	05/18/04	3.3	MW-11	02/03/04	77	4					
MW-4	08/11/04 11/16/04	16 14	MW-4 MW-4	08/11/04 11/16/04	2.6	MW-10	08/09/04 11/16/04	2.6	MW-11	05/19/04	7 7 12	-]		1		
MW-10	06/20/00	62	14/44-41	11,10,04		1414-10	11/10/04		MW-11	11/17/04	8.5	1] [
MW-10	04/24/01	16		[[l l					1	Į Į		1 1		ļ
MW-10	07/24/01	2.5							l								
MW-10	10/25/01	22				 							1 1		1		
MW-10	01/22/02	17							l]]							
MW-10	05/08/02	31		[l								
MW-10	08/07/02	29							l				j				
MW-10	10/31/02	29 22															
MW-10	02/04/03	20							l						1 1		
MW-10	08/12/03	22							i	i i			1				
MW-10	10/27/03	18	1]		}]		1]				
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MW-10	05/18/04	15	1	1								1	l i		1		
MW-10	08/09/04	12]						İ			1			}		
MW-10	11/16/04	15		1					1	[1			1 i		
														-			
		32 16.763 31 6 716314 18.775568 Normal Student's-1			16 3.256 8.6 1.650038 3.979400 Normal Student's-1			16 6.987500 13 3.515655 8.528280 Normal Student's-1			17 5.458824 12 3.292047 8 939137 Non-parametric 95% Chebyshev (Mean, 3d)			12 2.383333 3 0.345972 2.546795 Non-parametric Modified-I			10 5.300000 8 0 948683 5 899934 Non-parametric Modified-1

TABLE 6-1
GROUNDWATER SOURCE (ON-SITE) CONCENTRATION STATISTICS
MISSOURI ELECTRIC WORKS

		Bis(2-elhylhexyl) phthalate		-	Aroctor 1260 Unfiltered		-	Aroclor 1260 Filtered			Bis(2-chioroethyl) ether
Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)	Well ID	Sample Date	(µg/L)	Well ID	Sample Date	
MW-11A	06/22/00	<u>5</u>	MW-5	06/20/00	88	MW-11	06/22/00	45	MW-4	09/26/00	5
MW-11A	09/29/00	5	MW-5	09/27/00	80	MW-11	09/27/00	45	MW-4	04/24/01	5
MW-11A	04/25/01	11	MW-5	04/25/01	85	MW-11	04/26/01	0.1	MW-4	07/25/01	5
MW-11A	07/26/01	5	MW-5	07/26/01	11	MW-11	07/25/01	0.25	MW-4	10/25/01	5
MW-11A	10/24/01	5	MW-5	10/24/01	5.4	MW-11	10/24/01	0.25	MW-4	01/23/02	5
MW-11A	01/24/02	19	MW-5	01/23/02	13	MW-11	01/23/02	0.25	MW-4	05/08/02	5
MW-11A	05/09/02	26	MW-5	05/08/02	12	MW-11	05/09/02	0.25	MW-4	08/07/02	5
MW-11A	08/08/02	120	MW-5	08/07/02	110	MW-11	08/08/02	0.25	MW-4	10/31/02	5
MW-11A	11/01/02	13	MW-5	11/01/02	36	MW-11 (EPA S)	10/31/2002	0.1	MW-4	02/04/03	
MW-11A MW-11A	02/04/03	46 36	MW-5 MW-5	02/05/03	14	MW-11	08/13/03	0.25	MW-4	05/06/03	5
MW-11A	09/04/03	19	MW-5	05/06/03 08/14/03	50	MW-11	10/28/03	0.25	MW-4	08/12/03	5
MW-11A	10/29/03	16	MW-5	10/28/03	28	W44-11	08/11/04	0.25	MW-4	10/28/03	5
MW-11A	02/03/04	6.6	MW-5	02/03/04	0.25	ł			MW-4	02/03/04	5
MW-11A	05/18/04	16	MW-5	05/19/04	1.5					05/18/04	5
MW-11A	08/10/04	5	MW-5	08/11/04	13	•			MW-4	08/11/04	5
MW-11A	11/16/04	5	MW-5	11/17/04	29						
14144-1177	11,10,04		MW-11	06/22/00	110	1]			1	
	1		MW-11	09/27/00	200	1				1	
	1		MW-11	04/26/01	14	1				1	
	l	(MW-11	07/25/01	35	1				Į.	l
]	MW-11	10/24/01	09	1					}
	1		MW-11	01/23/02	1.2	1				1	
	1	ι Ι	MW-11	05/09/02	2.6	1	Į į				ł
			MW-11	08/08/02	0 69	1	1				
			MW-11	10/31/2002	0.59	1	į.]
			MW-11	02/05/03	0.25	1	ľ			1	1
			MW-11	05/06/03	0.56	1	1				
			MW-11	08/13/03	1.0	1	1				
			MW-11	09/14/03	0.31	1	ŀ			1	
		ļ	MW-11	10/28/03	0.39	1		į	ļ		
			MW-11	02/03/04	0.25	1					
			MW-11	05/19/04	0.24	1					
	1		MW-11	08/11/04	0.55	†	ì		Ì		1
			MW-11	11/17/04	0.125	†	İ				1
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		21.094118			18.663	1		0.933333			5 066667
		120			110	1		4.5			6.0
		28.108283			31.596381	1		1.666970			0.258199
		33.256287			31.961240	1		3.938506	!		5.195198446
		Gamma			Gamma]		Non-parametric	l		Non-parametric
		Approx. Gamma			Adjusted Gamma	1		97 6% Chebyshev (Mean, Sd)			Modified-I

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TABLE 6-3 COPC SOURCE CONCENTRATIONS USED FOR JOHNSON-ETTINGER MODEL MISSOURI ELECTRIC WORKS

	Henr	y's Law Constant	On-Site Groundwater Source Concentration for J&E ⁽¹⁾ Modelling	Off-Site Groundwater Source Concentration for J&E Modelling
			95th UCL ⁽²⁾ Concentrations and 0.5	Modelled Maximum Concentration in
			MDLs ⁽³⁾ for Non-detectable COPC	Layer 1 of Wetland
Chemical	atm-m³/mol	Source	υg/L	ug/L
1,1,2,2-Tetrachloroethane	3.45E-04	USEPA, 1996 ⁽⁴⁾	0.235	4.371E-03
1,1,2-Trichloroethane	9.13E-04	USEPA, 1996	0.165	3.861E-02
1,1-Dichloroethane	5.62E-03	USEPA, 1996	18.776	5.766E-01
Total 1,2 Dichloroethene	9.38E-03	USEPA, 1996	8.939	1.5
1,2,4 Trichlorobenzene	1.42E-03	USEPA, 1996	25 345	2
1,2-Dichloroethane	9.79E-04	USEPA, 1996	0.290	6.786E-02
1,2-Dichloropropane	2.80E-03	USEPA, 1996	0 155	3.627E-02
1,3-Dichlorobenzene	2.63E-03	SRC PhysProp Database (5)	76.732	3.42
1,4-Dichlorobenzene	2.43E-03	USEPA, 1996	84.196	2.47
2,4,6-Trichlorophenol	7.79E-06	USEPA, 1996	nm	nm
2,4-Dinitrotoluene	9.26E-08	USEPA, 1996 ⁽⁴⁾	nm	nm
2,6-Dinitrotoluene	3.05E-05	RAIS, 2005	nm	nm
2-Chlorophenol	3.91E-04	USEPA, 1996	5.701	1.674E-01
3,3-Dichlorobenzidine	4.00E-09	USEPA, 1996	กท	nm
4,6-Dinitro-2-Methyl Phenol	1.40E-06	SRC PhysProp Database (5)	nm	l nm
Aroclor-1016	8.18E-03	RAIS, 2005	0.250	9.850E-05
Aroclor-1221	2.28E-04	SRC PhysProp Database	nm	nm
Aroclor-1232	6.95E-04	SRC PhysProp Database	nm	nm
Aroclor-1242	3 43E-04	SRC PhysProp Database	0.100	3.940E-05
Aroclor-1248	4.40E-04	SRC PhysProp Database	nm	nm
Aroclor-1254	2.83E-04	SRC PhysProp Database	0.110	4.334E-05
Aroclor-1260 (Filtered)	3.36E-04	SRC PhysProp Database	3.939	1.773E-03
Benzene	5.55E-03	USEPA, 1996	58.986	0.562
Benzo(a)anthracene	3.35E-06	USEPA, 1996	nm	nm
Benzo(a) pyrene	1.13E-03	USEPA, 1996	nm	nm
Benzo(b)fluoranthene	1.11E-04	USEPA, 1996	1.215	1.604E-04
Benzo(k)fluoranthene	8.29E-07	USEPA, 1996	nm	nm
Bis (2-ethylhexyl phthalate)	1.02E-07	USEPA, 1996	nm	nm
bis(2-Chloroethyl) Ether	1.80E-05	USEPA, 1996	5.195	1.404E+00
bis(2-Chloroisopropyl)Ether	7.42E-05	SRC PhysProp Database	nm	nm
Bromodichloromethane	1.60E-03	USEPA, 1996	2.500	5.850E-01
Carbon Tetrachloride	3.04E-02	USEPA, 1996	0.210	3.906E-03



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TABLE 6-3

COPC SOURCE CONCENTRATIONS USED FOR JOHNSON-ETTINGER MODEL MISSOURI ELECTRIC WORKS

	Henry	y's Law Constant	On-Site Groundwater Source Concentration for J&E ⁽¹⁾ Modelling	Off-Site Groundwater Source Concentration for J&E Modelling
			95th UCL ⁽²⁾ Concentrations and 0.5 MDLs ⁽³⁾ for Non-detectable COPC	Modelled Maximum Concentration in Layer 1 of Wetland
Chemical	atm-m³/mol	Source	∪g/L	∪g/L
Chlorobenzene	3.70E-03	USEPA, 1996	2611.782	507
Chlorodibromomethane	7.83E-04	USEPA, 1996	0.205	4.797E-02
Chloroform	3.67E-03	USEPA, 1996	2.547	3.042E+00
Dibenzo(a,h)Anthracene	1.47E-08	USEPA, 1996	nm	nm
Dibenzofuran	2.13E-04	SRC PhysProp Database	0.825	3.251E-04
Hexachloro-1,3-Butadiene	8.15E-03	USEPA, 1996	0.745	2.935E-04
Hexachlorobenzene	1.32E-03	USEPA, 1996	0.740	7.548E-04
Indeno(1,2,3-cd)Pyrene	1.60E-06	USEPA, 1996	nm	nm
2-methylnaphthalene	2.12E-02	RAIS, 2005	0.720	1.339E-02
Naphthalene	4.83E-04	USEPA, 1996	5.621	1.618E-01
Nitrobenzene	2.40E-05	USEPA, 1996	0.940	1 748E-02
Nitrosodi-n-propylamıne	2.25E-06	USEPA, 1996	nm	nm
Pentachlorophenol	2.44E-08	USEPA, 1996	nm	nm
Tetrachloroethene	1.84E-02	USEPA, 1996	3.979	0.26
Trichloroethene	1.03E-02	USEPA, 1996	8.530	5.74
Vinyl Chloride	2.70E-02	USEPA, 1996	0.365	8.541E-02

Notes

- = not applicable inorganic chemical

nm = not modelled as Henry's Law Constant is less than 1 0 x 10°s, data was not available in J&E model, and/or chemical is inorganic

- (1) = Johnson and Ettinger
- (2) = Upper Confidence Level
- (3) = Method Detection Limit
- (4) = USEPA, May 1996 Soil Screening Guidance Technical Background Document
- (5) = Syracuse Research Council (SRC) PhysProp Database http://www.syrres.com/esc/physdemo.htm



TABLE 6-2 COPC CONCENTRATIONS PREDICTED BY GROUNDWATER MODEL MISSOURI ELECTRIC WORKS

		Sauraa	Leastien 1	Looption 0	Looption OR				
		Source	Location 1	Location 2	Location 2B	!! 0			Location 6
		Concentration	(Layer 1	(Discharge to	(Stream Baseflow	Location 3	Location 4	Location 5	
Compound	Units	Used	Wetland)	Creek)	Discharge)	(Well A)	(Well B)	(Well C)	(Well D) ¹
			Modele	ed Concentratio	n .				
Benzene	ug/L	83	0.562	3.35E-02	3.65E-03	75.73	40.34	0.00000146	75.73
Chlorobenzene	υg/L	3200	507	10.91	1.36	2901.18	1351.08	2.48E-05	2901.18
1,3-Dichlorobenzene	ug/L	100	3.42	1.97	0.277	43.99	32.98	1.64E-05	43.99
1,4-Dichlorobenzene	υg/L	120	2.47	2.37	0.333	49.62	39.23	1.81E-05	49.62
TCE	υg/L	13	2.1	0.197		5.68	5.23	7.54E-07	5.68
TCE	ug/L	35	5.74	0.512	2.93E-02	15.25	11.6	1.20E-06	15.25
PCE	ug/L	12	0.26	4.13E-02	8.41E-04	5.39	4.32	9.48E-07	5.39
1,2,4-trichlorobenzene	ug/L	65.5	2	0.125	3.42E-03	60.52	40.53	1.96E-06	60.52
Total 1,2-Dichloroethene	υg/L	12	1.5	1.4	0.168	10.97	7.58	1.22E-06	10.97
		Nori	malized Mod	eled Concentra	Hon (C/C°)				
Benzo(k) fluoroanthene	unitless	n/a	1.32E-04	2.86E-07	7.52E-09	7.59E-01	6.46E-01	8.90E-08	7.59E-01
Aroclor	unitless	n/a	3.94E-04	6.49E-05	1.71E-06	9.16E-01	6.43E-01	8.90E-08	9.16E-01
Hexochlorobenzene	unitless	n/a	1.02E-03	2.06E-04	5.41E-06	9.16E-01	6.43E-01	8.90E-08	9.16E-01
1,1,2,2-Tetrachloroethan	unitless	n/a	1.86E-02	3.44E-03	1.65E-04	2.09E-01	3.94E-01	9.47E-07	3.94E-01
bis(2-chloroethyl) ether	unitless	n/a	2.34E-01	1.52E-02	8.90E-04	9.36E-01	6.43E-01	8.90E-08	9.36E-01

Note:

^{- =} not modeled

^{1.} Hypothetical well D Modeled concentrations are equal to the highest concentration between Well A or B.

TABLE 6-4
COPC CONCENTRATIONS PREDICTED BY JOHNSON-ETTINGER MODEL
MISSOURI ELECTRIC WORKS

	Vapor Concentration	Vapor Concentration
	in On-site Building	in Off-site Building
1	Predicted by J&E Model	Predicted by J&E Model
Chemical	ug/m³	ug/m³
1,1,2,2-Tetrachloroethane	1.96E-04	7.59E-06
1,1,2-Trichloroethane	3.13E-04	9.30E-05
1,1-Dichloroethane	9.75E-02	2.27E-03
Total 1,2 Dichloroethene	6.14E-02	7.42E-03
1,2,4 Trichlorobenzene	2.96E-02	4.09E-03
1,2-Dichloroethane	7.31E-04	1.92E-04
1,2-Dichloropropane	5.35E-04	1.06E-04
1,3-Dichlorobenzene	2.33E-01	8.90E-03
1,4-Dichlorobenzene	2.28E-01	6.16E-03
2,4,6-Trichlorophenol	nm	nm
2,4-Dinitrotoluene	nm	nm
2,6-Dinitrotoluene	nm	nm
2-Chlorophenol	3.93E-03	3.06E-04
3,3-Dichlorobenzidine	nm	nm
4,6-Dinitro-2-Methyl Phenol	nm	nm
Aroclor-1016	4.050E-05	6.760E-08
Aroclor-1221	nm	nm
Aroclor-1232	nm 🕠	nm
Aroclor-1242	2.59E-05	3.48E-08
Aroclor-1248	nm	nm
Aroclor-1254	5.92E-05	5.00E-08
Aroclor-1260 (Filtered)	3.26E-03	2.08E-06
Benzene	3.10E-01	2.17E-03
Benzo(a)anthracene	nm	nm
Benzo(a)pyrene	nm	nm
Benzo(b)fluoranthene	7.06E-05	5.21E-08
Benzo(k)fluoranthene	nm	nm
bis(2-Chloroethyl) Ether	3.04E-04	4.11E-04
bis(2-Chloroisopropyl) Ether	nm	nm
Bis (2-ethylhexyl phthalate)	nm	nm
Bromodichloromethane	4.20E-03	1.20E-03
Carbon Tetrachloride	2.52E-03	3.04E-05
Chlorobenzene	9.59E+00	1.52E+00
Chlorodibromomethane	1.49E-04	9.87E-05
Chloroform	1.23E-02	1.13E-02
Dibenzo(a,h)Anthracene	nm	nm

TABLE 6-4
COPC CONCENTRATIONS PREDICTED BY JOHNSON-ETTINGER MODEL
MISSOURI ELECTRIC WORKS

	Vapor Concentration	Vapor Concentration
	in On-site Building	in Off-site Building
	Predicted by J&E Model	Predicted by J&E Model
Chemical	ug/m³	ug/m³
Dibenzofuran	5.62E-06	3.25E-04
Hexachloro-1,3-Butadiene	2.63E-03	7.48E-07
Hexachlorobenzene	8.52E-04	1.20E-06
Indeno(1,2,3-cd)Pyrene	nm	nm
2-methylnaphthalene	5.090E-04	2.190E-05
Naphthalene	4.74E-03	2.75E-04
Nitrobenzene	7.64E-05	6.87E-06
Nitrosodi-n-propylamine	nm	nm
Pentachlorophenol	nm	nm [
Tetrachloroethene	3.01E-02	1.31E-03
Trichloroethene	2.21E-01	2.50E-02
Vinyl Chloride	6.16E-03	9.36E-04

NOTE:

nm = not modelled as Henry's Law Constant is less than 1.0×10^{-6} , data was not available.

in J&E model, and/or chemical is inorganic

^{(1) =} Johnson and Ettinger

TABLE 6-5 SUMMARY OF POINT OF EXPOSURE (POE) CONCENTRATIONS FOR RME AND CTE EXPOSURES MISSOURI ELECTRIC WORKS

																							BECING WORK
r	T			Son 1 (Layer 1 We	Hand)	Localio		Creek)		28 (Surface Water	r in Creek)		ocation 3 (Well A	4)		Location 4 (Well B		l l	ocation 5 (Well C)		ocation 6 (Well I	<u>5)</u>
			Normalized	Groundwater		Normalized	Groundwater		Normalized	Groundwater		Normalized	Groundwater		Normalized	Groundwater		Normalized	Groundwater		Normalized	Groundwater	[
į .	Į I	l	Modelled	Source	Į POE Į	Modelled	Source	POE	Modelled	Source	POE	Modelled	Souce	POE	Modelled	Source	POE	Modelled	Source	POE	Modelled	Souce	POE
j			Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration	Concentration
CAS No.	CHEMICAL NAME	Modeled Surrogate	(C/C°)	(ug/L)	(vg/L)	(C/C°)	(vg/L)	(vg/L)	(C/C°)	(ug/L)	(ug/L)	(C/C°)	(ug/L)	(ug/L)	(C/C°)	(vg/L)	(ug/L)	(C/C°)	(ug/L)	(ug/L)	(C/C°)	(vg/L)	(ug/L)
79-34-5	1,1,2,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1.860E-02	0.235	4.371E-03	3.440E-03	0.235	8.084E-04	1 647E-04	0.235	3.871E-05	2.090E-01	0.235	49126-02	3 940E-01	0.235	9.259E-02	9 47E-07	0.235	2.225E-07	3.940E-01	0.235	9.259E-02
79-00-5	1,1,2-Trichloroethane	bis(2-Chloroethyl) Ether	2.340E-01	0 165	3.861E-02	1.520E-02	0 165	2.508E-03	8 904E-04	0 165	1 469E-04	9.360E-01	0 165	1 544E-01	6 430E-01	0 165	1.061E-01	8 90E-08	0 165	1 469E-08	9.360E-01	0 165	1.544E-01
75-34-3	1,1-Dichloroethane	1,1,2,2-Tetrachloroethane	1.860E-02	31	5.766E-01	3 440E-03	31	1 066E-01	1 647E-04	31	5 107E-03	2.090E-01	31	6.479E+00	3.940E-01	31	1.221E+01	9 47E-07	31	2.936E-05	3.940E-01	31	1.221E+01
156-60-5/156-59-2	1,2-Dichloroethene Total	-	-	_	1.5	-	-	1.4	-	_	0 168484251	_	-	10 97	-	-	7.58	-	i -	1.220E-06	-	i -	10 97
120-82-1	1,2,4 - Trichlorobenzene	<u> </u>	-		2			0 125	-		0.003415705		-	60.52	_	_	40.53	-	-	1 960E-06	-	-	60.52
107-06-2	1,2-Dichloroethane	bs(2-Chloroethyl) Ether	2.340E-01	0.29	6 786E-02	1.5206-02	0.29	4 408E-03	8 904E-04	0.29	2.582E-04	9.360E-01	0.29	2.7145-01	6.430E-01	0.29	1.865E-01	8 906-08	0.29	2.581E-08	9.360E-01	0.29	2.714E-01
78-87-5	1,2-Dichloropropane	bs(2-Chloroethyl) Ether	2.340E-01	0 155	3 627E-02	1.520E-02	0 155	2.356E-03	8 904E-04	0.155	1.380E-04	9.360E-01	0 155	1.451E-01	6.430E-01	0 155	9 967E-02	8 90£-08	0 155	1.380E-08	9.360E-01	0 155	1.451E-01
541-73-1	1,3-Dichlorobenzene	} -	-	_	3.42	-	-	197	-	-	0.277239592	_	-	43 99	-	-	32 98	-	-	1 64E-05	-	_	43 99
106-47-7	1,4-Dichloroberizene	l .			2.47			2.37			0.332753253	i	<u> </u>	49.62	l . .	T.	39.23			1.81E-05	-	-	49 62
88-06-2	2,4,6-Inchlorophenol	1,1,2,2-Tetrachioroethane	1.860E-02	0.49	9 114E-03	3 440E-03	0 49	1 686E-03	1 647E-04	0.49	8.072E-05	2.090E-01	0.49	1.024E-01	3.940E-01	0.49	1 931E-01	9 47E-07	0 49	4 640E-07	3.940E-01	0 49	1 9315-01
121-14-2	2,4-Dinitrofoluene	bs(2-Chloroethyl) Ether	2.340E-01	1 185	2.773E-01	1.520E-02	1 185	1.801E-02	8.904E-04	1 185	1.055E-03	9.360E-01	1 185	1 109E+00	6.430E-01	1 185	7 620E-01	8.90E-08	1 185	1 055E-07	9.360E-01	1 185	1 109E+00
606-20-2	2,6-Dmitrofoluene	1,1,2,2-Tetrachloroethane	1.860E-02	0 675	1.256E-02	3 440E-03	0 675	2.322E-03	1 647E-04	0 675	1 112E-04	2.090E-01	0 675	1 411E-01	3 940E-01	0 675	2.660E-01	9.47E-07	0 675	6.392E-07	3.940E-01	0 675	2.660E-01
95-57-8	2-Chlorophenol	1,1,2,2-Tetrachloroethane	1.860E-02	900	1 674E-01	3.440E-03	900	3.096E-02	1 647E-04	9.00	1.483E-03	2.090E-01	9.00	1.881E+00	3.940E-01	9.00	3 546E+00	9 47E-07	900	8.523E-06	3 940E-01	900	3.546E+00
91-94-1	3,3-Dichlorobenzidine	1,1,2,2-Tetrachloroethane	1.860E-02	0.755	1 404E-02	3 440E-03	0 755	2.597E-03	1 647E-04	0.755	1.244E-04	2.090E-01	0 755	1.578E-01	3 940E-01	0 755	2.975E-01	9.47E-07	0755	7 1505-07	3 940E-01	0 755	2.975E-01
534-52-1		1,1,2,2-Tetrachloroethane	1.860E-02	0 485	9.021E-03	3 440E-03	0 485	1 668E-03	1 647E-04	0 485	7 990E-05	2.090E-01	0 485	1.014E-01	3 940E-01	0 485	1 91 IE-01	9 47E-07	0 485	4 593E-07	3 940E-01	0 485	1 911E-01
12674-11-2	Aroctor-1016	Aroctor 1232	3.940E-04	0.250	9.850E-05	6.490E-05	0.250	1 623E-05	1 710E-06	0.250	4.276E-07	9 160E-01	0.250	2.290E-01	6 430E-01	0.250	1 608E-01	8 906-08	0.250	2.225E-08	9 160E-01	0.250	2.290E-01
11104-28-2	Aroctor-1221	Aroctor 1232	3 940E-04	0 145	5 713E-05	6.490E-05	0 145	9 411E-06	1 710E-06	0 145	2.480E-07	9 160E-01	0 145	1.3286-01	6 430E-01	0 145	9.324E-02	8.90E-08	0 145	1.291E-08	9 160E-01	0 145	1.328E-01
11141-16-5	Aroclor-1232	Arocior 1232	3.940E-04	0 175	6.895E-05	6.490E-05	0 175	1 136E-05	1 710E-06	0 175	2.993E-07	9 160E-01	0 175	1 603E-01	6.430E-01	0 175	1 125E-01	8 90E-08	0 175	1.558E-08	9 160E-01	0 175	1 603E-01
53469-21-9	Aroctor-1242	Aroclor 1232	3.940E-04	0 10	3 940E-05	6.490E-05	0 10	6 490E-06	1 710E-06	0 10	1.710E-07	9 160E-01	0 10	9 160E-02	6.430E-01	0 10	6.430E-02	8 90E-08	0 10	8 900E-09	9 160E-01	0 10	9160E-02
12672-29-6	Aroclor-1248	Aroclor 1232	3.940E-04	0.065	2.561E-05	6.490E-05	0 065	4.219E-06	1 710E-06	0 065	1 112E-07	9 160E-01	0.065	5 954E-02	6.430E-01	0 065	4 180E-02	8 90E-08	0 065	5 785E-09	9 160E-01	0.065	5 954E-02
11097- 69 -1	Aroctor-1254	Aroclor 1232	3.940E-04	011	4.334E-05	6.490E-05	011	7 139E-06	1 710E-06	011	1.881E-07	9 160E-01	0.11	1.008E-01	6.430E-01	011	7.073E-02	8 90E-08	0 11	9 790E-09	9 160E-01	011	1.008E-01
11096-82-5	Arocior 1260 filtered	Aroctor 1232	3.940E-04	4.50	1 773E-03	6.490E-05	4 50	2.921E-04	1 710E-06	4.50	7 696E-06	9 160E-01	4.50	4 122E+00	6.430E-01	4 50	2.894E+00	8 90E-08	4.50	4 005E-07	9 160E-01	4.50	4 122E+00
71-43-2	Benzene	l		1	0.562		-	0.0335		<u>-</u> .	0.0036			75.73		1 .=.	40.34		.=.	1 46E-06	-		75 73
56-55-3	Benz(a)anthrocene	Aroctor 1232	3.940E-04	071	2.797E-04	6.490E-05	071	4 608E-05	1 710E-06	071	1.214E-06	9 160E-01	071	6.504E-01	6.430E-01	071	4.565E-01	8 90E-08	071	6.319E-08	9 160E-01	071	6 504E-01
50-32-8	Benzo(a)pyrene	Aroclor 1232	3 940E-04	0.66	2.600E-04	6.490E-05	0 66	4.283E-05	1 710E-06	0 66	1 129E-06	9 160E-01	0.66	6 046E-01	6.430E-01	0 66	4.244E-01	8.90E-08	0 66	5.874E-08	9 160E-01	0 66	6 046E-01
205-99-2	Benzo(b)fluoranthene	Benzo(k) fluoroanthene	1.320E-04	1.215	1 604E-04	2.860E-07	1.215	3.475E-07	7.522E-09	1.215	9 139E-09	7.590E-01	1.215	9.222E-01	6.460E-01	1.215	7.849E-01	8.90E-08	1.215	1.081E-07	7 590E-01	1,215	9.222E-01
207-08-9	Benzo(k)fluoranthene	Benzo(k) fluoroanthene	1.3206-04	0.70	9.240E-05 1.404E+00	2.860E-07 1.520E-02	070 600	2.002E-07 9 120E-02	7.522E-09 8 904E-04	0.70 6.00	5.265E-09 5.343E-03	7.590E-01 9.360E-01	070	5.313E-01 5.616E+00	6 460E-01	0.70	4 522E-01	8.90E-08	070	6.230E-08	7 590E-01	0.70	5.313E-01
111-44-4	bis(2-Chloroethyl) Ether	bs(2-Chloroethyl) Ether	2.340E-01	0.87		1.5206-02	0.87	1.3226-02		0.87	7.747E-04		6.00		6 430E-01	6.00	3.858E+00	8 90E-08	6.00	5.340E-07	9.360E-01	6.00	5 616E+00
108-60-1	bis(2-Chlorosopropyl) Ethe		2.340E-01 3.940E-04	120	2.036E-01 4.728E-02	6 490E-05	120	7 788E-03	8 904E-04 1 710E-06	120	2.0526-04	9.360E-01 9.160E-01	0.87 120	8 143E-01 1 099E+02	6 430E-01	0.87 120	5 594E-01	8 90E-08	0.87	7 743E-08	9.360E-01	0.87	8.143E-01
117-81-7	Bs(2-ethylhexyl)phthalate Bromodichloromethane		2.340E-01	2.50	5.850E-01	1.520E-02	2.50	3,800E-02	8 904E-04	2.50	2.226E-03	9.360E-01	2.50	2.340E+00	6.430E-01 6.430E-01	2.50	7 716E+01 1 608E+00	8 90E-08 8 90E-08	120 2.50	1 068E-05 2.225E-07	9 160E-01	120	1 099E+02
75-27-4 56-23-5		bs(2-Chloroethyl) Ether 1,1,2,2-Tetrachioroethone	1.860E-02	0.21	3.906E-03	3.440E-03	0.21	7.224E-04	1 647E-04	0.21	3 460E-05	2.090E-01	0.21	4.389E-02	3.940E-01	0.21	8.274E-02	9 47E-07	0.21	1 989E-07	9.360E-01	2.50	2.340E+00 8.274E-02
	Carbon Tetrachloride	1,1,2,2-lellochbloelliche	1.0000-02	021	507	3.4401-03	0.21	10.91	1 04/12-04	0.21	1.36	2.0702-01	0.21	2901 18	3.7400-01	0.21	1351.08	74/5-0/	0.21		3 940E-01	0.21	
108-90-7 124-48-1	Chlorobenzene Chlorodibromomethane	bs/2-Chloroethyl) Ether	2,3406-01	0.205	4 797E-02	1.5206-02	0.205	3 1165-03	8 904E-04	0.205	1.825E-04	9.360E-01	0.205	1 9195-01	6 430E-01	0.205	1,3185-01	8 905-08	0.205	2.48E-05 1.825E-08	9.360E-01	0.205	2901 18 1 919E-01
67-66-3	Chloroform	bs(2-Chloroethyl) Ether	2.340E-01	13.00	3.042E+00	1.520E-02 1.520E-02	13.00	1 976E-01	8 904E-04	13.00	1 158E-02	9.360E-01	13.00	1.217E+01	6.430E-01	13.00	8.359E+00	8 90E-08	13.00	1.525E-08 1.157E-06	9.360E-01 9.360E-01	13.00	1.217E+01
53-70-3	Dibenzola.h)Anthracene	Benzo(k) fluoroanthene	1.3205-04	065	8 580E-05	2.860E-07	0 65	1.859E-07	7 5226-09	0 45	4.889E-09	7 590E-01	0 65	4 934E-01	6.460E-01	0 65	4 199E-01	8 90E-08	065	5 785E-08	7.590E-01	0 65	4 934E-01
132-64-9	Diberzofuran	Aroctor 1232	3.940E-04	0.83	3.251E-04	6 490E-05	0.83	5.354E-05	1 710E-06	0.83	1,4115-06	9 160E-01	0.83	7 557E-01	6.430E-01	0.83	5.305E-01	8.90E-08	0.83	7.343E-08	9 160E-01	0.83	7 557E-01
87-68-3	Hexachlaro-1.3-Butadiene		3.9406-04	0.65	2.935E-04	6 490E-05	075	4.835E-05	17105-06	0.75	1,274E-06	9 160E-01	0.55	6.8245-01	6.430E-01	0.55	4 790E-01	8 906-08	0.65	6 631E-08	9 160E-01	0.25	6.824E-01
118-74-1	Hexachloroberzene	Hexochloroberizene	1.020E-03	074	7 548E-04	2.060E-04	074	1.524E-04	5.41E-0		4.006E-06	9 160E-01	074	6 778E-01	6 430E-01	074	4758E-01	8 90E-08	074	6.586E-08	9 160E-01	0.73	6 778E-01
193-39-5	Indenoi1.2.3-cd)Pyrene	Benzolid fluorognthene	1.320E-04	070	9.240E-05	2.860E-07	070	2 0025-07	7 5226-09	070	5.265E-09	7.590E-01	070	5,313E-01	6 460E-01	070	4.522E-01	8 906-08	070	6.230E-08	7.590E-01	070	5.313E-01
91-57-6	2-methylnachthalene	1,1,2,2-Tetrachloroethane	1.860E-02	072	1.339E-02	3 440E-03	072	2.477E-03	1 647E-04	072	1 186E-04	2.090E-01	072	1 505E-01	3 940E-01	072	2.837E-01	9 47E-07	072	6.818E-07	3 9406-01	072	2.837E-01
91-20-3	Naphthalene	1.1.2.2-Tetrachloroethane	1.860E-02	87	1 6185-01	3 440E-03	87	2 993E-02	1 647E-04	87	1.433E-03	2.090E-01	87	1.818E+00	3 940E-01	87	3 428E+00	9 47E-07	87	8.239E-06	3 940E-01	87	3 428E+00
98-95-3	Ndrobenzene	1.1.2.2-Tetrachloroethane	1.860E-02	094	1 748E-02	3 440E-03	0.94	3.2345-03	1 647E-04	094	1.549E-04	2.090E-01	0.94	1 965E-01	3 940E-01	094	3 704E-01	9 47E-07	094	8 902E-07	3 940E-01	094	3 704E-01
621-64-7		bis(2-Chloroethyl) Ether	2.340E-01	8.1	1,895E+00	1 520E-02	81	1,231E-01	8 904E-04	81	7.2126-03	9.360E-01	J 81	7 582E+00	6 430E-01	81	5.208E+00	8 90E-08	81	7.209E-07	9.360E-01	81	7.582E+00
218-01-9	Pentachlorophenol	Aroctor 1232	3.940E-04	4.52	1 781E-03	6 490E-05	4 52	2.9335-04	1 710E-06	4.52	7 730E-06	9 160E-01	4.52	4 140E+00	6 430E-01	4.52	2.906E+00	8 90E-08	4 52	4.023E-07	9 160E-01	4.52	4 140E+00
127-18-4	Tetrachloroethene	_			0.26		_	0.0413	1	_	0 0000841116	''		5.39	-		4.32	1	1 7.25	9 48E-07	7 100C-01	"-"	5.39
79-01-06	Trichloroethene	Source Conc 35 ug/L	I _	_	574	_	_	0.512	_	_	0 029336582	_	_	15.25	_	_	11.6	_	1 _	1 20E-06	_	I _	15.25
75-01-4	Vinvi Chlonde	bs(2-Chloroethyl) Ether	2.340E-01	0.365	8 541E-02	1 520E-02	0.365	5 548E-03	8 904E-04	0.365	3.250E-04	9.360E-01	0.365	3 416E-01	6 430E-01	0.365	2.347E-01	8 90E-08	0.365	3 2495-08	9.360E-01	0 365	3 416E-01
	I very Ciliana	Tools Cumocuité sum	1 2000		,	, , , , , , , , , , , , , , , , , , , ,	****	1 00.00	1 0,000		1 2224	1 /2002-01		<u> </u>	1 0 7002-01			07000	1 0.000	34712-00	/200L-01	1 0000	1 27100-01

Note

Hypothetical well D Modeled concentrations are equal to the highest concentration between Weil A or





TABLE 7-1
CONTAMINANT SPECIFIC DERMAL EXPOSURE PARAMETERS
MISSOURI ELECTRIC WORKS

	Lag time	Time to reach	Fraction absorbed	Dermal permeability coefficient	Dimensionless
Parameter	per event	steady state	dose	for compound in water	ratio
Symbol	tor -event	† *	FA	Кр	В
Units	hr	hr	dimensionless	cm/hr	dimensionless
Compound					
Benzo(a)pyrene	2.69	6.46	1	7.00E-01	4.30E+00
Benzo(b)fluoranthene	2.77	6.65	1	7.00E-01	4.30E+00
Benzo(k)fluoranthene	2.77	12.02	1	6.90E-01	4.22E+00
bis(2-Chloroethyl) Ether	0.68	1.62	1	1.78E-03	8.17E-03
bis(2-Chloroisopropyl) Ether	0.97	2.33	1	5.20E-02	2.60E-01
Bis (2-ethylhexyl phthalate)	16.64	39.93	0.8	2.49E-02	1.90E-01
Bromodichloromethane	0.88	2.12	1	4.62E-03	2.27E-02
Carbon Tetrachloride	0.78	1.86	1	1.63E-02	7.78E-02
Chlorobenzene	0.46	1.09	1	2.82E-02	1.15E-01
Chlorodibromomethane	1.57	3.77	1	3.22E-03	1.79E-02
Chloroform	0.50	1.19	1	6.83E-03	2.87E-02
Dibenzo(a,h)Anthracene	3.88	9.32	0.6	1.51E+00	9.68E+00
Dibenzofuran	0.94	2.24	1	9.80E-02	4.90E-01
Hexachloro-1,3-Butadiene	3.09	7.42	0.9	8.09E-02	5.03E-01
Hexachlorobenzene	4.22	10.12	0.9	1.34E-01	8.67E-01
Indeno(1,2,3-cd)Pyrene	3.78	9.07	0.6	1.04E+00	6.65E+00
2-methylnaphthalene	0.67	1.60	1	9.20E-02	4.20E-01
Naphthalene	0.56	1.34	1	4.66E-02	2.03E-01
Nitrobenzene	0.52	1.25	1	5.40E-03	2.00E-02
Nitrosodi-n-propylamine	0.57	1.37	1	2.33E-03	1.02E-02
Pentachlorophenol	3.33	7.99	0.9	3.90E-01	2.50E+00
Tetrachloroethene	0.91	2.18	1	3.34E-02	1.66E-01
Trichloroethene	0.58	1.39	1	1.16E-02	5.13E-02
Vinyl Chloride	0.24	0.57	1	5.60E-03	1.70E-02



MEW Site File 3DISC100155



TABLE 7-1
CONTAMINANT SPECIFIC DERMAL EXPOSURE PARAMETERS
MISSOURI ELECTRIC WORKS

	Lag time	Time to reach	Fraction absorbed	Dermal permeability coefficient	Dimensionless
Parameter	per event	steady state	dose	for compound in water	ratio
Symbol	tor -event	†*	FA	Кр	В
Units	hr	hr	dimensionless	cm/hr	dimensionless
Compound					
1,1,2,2-Tetrachloroethane	0.93	2.24	1	6.94E-03	3.46E-02
1,1,2-Trichloroethane	0.60	1.43	1	6.44E-03	2.86E-02
1,1-Dichloroethane	0.38	0.92	1	6.74E-03	2.58E-02
Total 1,2 Dichloroethene	0.37	0.89	1	7.71E-03	2.92E-02
1,2,4 Trichlorobenzene	1.11	2.66	1	6.63E-02	3.43E-01
1,2-Dichloroethane	0.38	0.92	1	4.20E-03	1.61E-02
1,2-Dichloropropane	0.46	1.10	1	7.76E-03	3.17E-02
1,3-Dichlorobenzene	0.71	1.71	1 (5.79E-02	2.70E-01
1,4-Dichlorobenzene	0.71	1.71	1	4.20E-02	1.96E-01
2,4,6-Trichlorophenol	1.36	3.27	1	3.46E-02	1.87E-01
2,4-Dinitrotoluene	1.12	2.69	1	3.10E-03	0.00E+00
2,6-Dinitrotoluene	1.12	2.69	1	2.10E-03	0.00E+00
2-Chlorophenol	0.56	1.34	ì	7.99E-03	3.48E-02
3,3-Dichlorobenzidine	2.80	6.72	1	1.28E-02	7.83E-02
4,6-Dinitro-2-Methyl Phenol	1.38	3.30	1	3.10E-03	2.00E-02
Aroclor-1016	2.97	12.03	1	3.10E-01	1.88E+00
Aroclor-1221	1.22	4.7	1	1.40E-01	7.40E-01
Aroclor-1232	1.22	4.7	1	1.40E-01	7.40E-01
Aroclor-1242	4.63	19.83	1	5.50E-01	3.58E+00
Aroclor-1248	4.63	19.94	1	5.90E-01	3.87E+00
Aroclor-1254	7.22	31.74	1 1	7.50E-01	5.22E+00
Aroclor-1260 (Filtered)	17.6	81.43	1	3.00E+00	2.27E+01
Benzene	0.29	0.70	1	1.49E-02	5.05E-02
Benzo(a)anthracene	2.03	4.87	1	4.70E-01	2.80E+00

TABLE 7-2
RME RISK CALCULATIONS FOR ON-SITE WORKER (HIGH TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

																Che	emicals of Pote	ntial Concer	ר			
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbol	Units	Non Contaminant- Specific Parameters	1,1,22-Tefrachlaroethane	1,1,2-Trichlaroethane	1,1-Dichlaroethane	Total 1,2 Dichlarcethene	1,2,4 Trichlorobenzene	1.2-Dichlaroethane	1,2-Dichlaropropane	1,3-Dichloroberizene	1,4-Dichlorobenzene	2.4.6-Inchlarophenal	2.4-Dinitrototuene	2.6-Dinitratotuene	2-Chlorophenol	3.3-Dichlorobenzidine	4,6-Dinitro-2-Methyl Phenol
Groundwater	Air	Indoor air	Vapour Intrusion - Inhalation		Com	ug/m3		1 96E-04	3.13E-04	9.75E-02	6.14E-02		7.315-04	5.35E-04	2.33E-01	2.28E-01	0.00E+00	0.00E+00			0.005+00	0.00E+00
				POE concentration	Con	mg/m3	_	1.96E-07	3.13E-07	9.75E-05	6.14E-05	2.96E-05	7.31E-07	5.35E-07	2.33E-04	2.28E-04	0.00E+00	0 00E+00	3 93E-06	3.93E-06	0.00E+00	0.00E+00
				Inhalation rate	IR .	m3/hr	2															
				Exposure firme	et ef	h/d	10															
				Exposure frequency Exposure duration	ED E	d∕y	250 25															
				Body weight	BW	ka:	25 70															
				Averaging time carcinogens	AT _e	ď	25,550															
				Averaging time non-cardinogens	ATn _c	d	9,125															
				Average Intake from inhalation carcinogens	l _a	mg/kg-d		1.36986E-08	2.18759E-08	6.81437E-06	4.29131E-06	2.06877E-06	5 10903E-08	3.73917E-08	1.62846E-05	1.593516-05	0	0	2.74672E-07	2.74672E-07	0	0
				Inhalation Cancer Slope Factor	CSF.	kg-d/mg		2.03E-01	5.70E-02				9 105-02			2.20E-02	1.09E-02				•	•
				Rosk	R	fraction		2.78E-09	1.25E-09				4 65E-09			3.51E-07	0.00=+00					
				Total carcinogenic risk for exposure route	Rı	fraction																
				Average intake from inhalation non-carcinogens	l _o	mg/kg-d		3.83562E-08	6.12524E-08	1 908025-05	1.20157E-05	5 79256E-06	1.43053E-07	1.04697E-07	4.55969E-05	4.46184E-05	0	0	7.6908E-07	7.6908E-07	0	0
				Inhalation Reference Dose	RfD _{int}	mg/kg-d						1.145-03	1.40E-03	1 14E-03		2.30E-01						
				Hazard Quotient	HQ	mg/kg-d						0 005081196	0.000102181	9.18392E-05		0.000193993						
				Total Hazard Index	н	mg/kg-d									<u></u>							
			Carcinogenic risk - all routes	(detected organics)																		
			Caranogenic risk - all routes																			
			TOTAL CARCINOGENIC RISK		Sum Rt	fraction		2.78E-09	1 25E-09	0 00E+00	0.00E+00	0 00E+00	4 65E-09	0 00E+00	0 00E+00	3.51E-07	0 00E+00	0 00E+00	0 00€+00	0 00E+00	0 00E+00	0.00E+00
			Non-Carcinogenic risk - all ro	utes (detected organics)																		
			Non-Caramogenic risk - all ro																			
			TOTAL NON-CARCINOGENIC	HAZARD INDEX - ALL ROUTES	Sum HI	fraction		0	0	0	0	0 005081196	0 000102181	9 18392E-05	0	0 000193993	0	0	0	0	0	Ö

1- ug/l = micrograms per Lifer
2- ug/m3 = micrograms per cubic meter
3- h/d = hours per day

4- I/d = Itters per day 5- d/y = days per year

5- cry = ocrys per 6- y = year 7- kg = kilogram 8- d = day 9- hr = hour

10-mg/kg-d = milligrams per kilogram per day 11-kg-d/mg = kilograms per day per milligram 12- m3/hr = cubic meter per hour

13- mg/m3 = milligrams per cubic meter

TABLE 7-2
RME RISK CALCULATIONS FOR ON-SITE WORKER (HIGH TCE SLOPE FACTOR)
AUSSOURI ELECTRIC WORKS

				*															Chemica	s of Potential (Concern	
Exposure Route	Parameter	Symbol	Units	Arockor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Arockar-1254	Aroclor-1260 (Fittered)	Benzene	Berzo(a)anthracene	Вепис(а)ругепе	Benzo(b)fluoranihene	Berzo(k)fivoranthene	be(2-Chloroethy!) Ether	bs(2-Chlorokopropyl) Ether	Bs (2-ethylhexyl phtholate)	Bromodichloromethane	Carbon Tetrachlande	Chlarobenzene	the second state of the se
Vapour intrusion - inhalation		Com	ug/m3	4.05E-05	0.00E+00	0.00E+00	2.59E-05	0.00E+00	5.925-05	3.26E-03	3.10E-01	0 00E+00	0.00E+00	7.06E-05	0.00E+00	3.04E-04	0.00E+00	0 00E+00	4.20E-03	2.526-03		1.49E-04
	POE concentration	Com	mg/m3	4.05E-08	0.00E+00	0 00E+00	2.59E-08	0.00E+00	5.92E-08	3.26E-06	3.10E-04	0.00E+00	0 00E+00	7.06E-08	0.00E+00	3.04E-07	0.00E+00	0.00E+00	4.20E-06	2.525-06	9,59E-03	1.49E-07
	Inhaiation rate	IR ET	m3/hr h/d																			
	Exposure time Exposure frequency	EF	d/y																			
	Exposure duration	ĒD	у,																			
	Body weight	BW	kg																			
	Averaging time carcinogens	AT _c	ď																			
	Averaging time non-carainagens	ATn _e	đ																			
	Average intake from inhalation carcinogens	۱.	mg/kg-d	2.83058E-09	0	0	1.810185-09	0	4.13755E-09	2.27845E-07	2.16662E-05	0	0	4.9343E-09	0	2.12469E-08	0	0	2.93542E-07	1.76125E-07	0.000670254	1.04138E-08
	Inhalation Cancer Slope Factor	CSF _e	kg-d/mg	4 00E-01	4 00E-01	4.00E-01	4.00E-01	4 00E-01	4.00E-01	4.00E-01	2.73E-02	3 085-01	3.08E+00	3.08E-01	3.086-01	1.16E+00				5.20E-02		
	Risk	R	fraction	1.13E-09	0.00E+00	0.00E+00	7.24E-10	0.00E+00	1.66E-09	9.115-08	5.91E-07	0.00E+00	0.00E+00	1.525-09	0.00E+00	2.46E-08				9.16E-09		
	Total carcinogenic risk for exposure route	R _t	fraction																			
	Average intake from inhalation non-carcinogens	Į,	mg/kg-d	7.92564E-09	0	0	5.06849E-09	0	1.15851E-08	6.37965E-07	6.06654E-05	0	0	1.3816E-08	0	5 94912E-08	0	0	8.21918E-07	4 93151E-07	0.001876712	2.91585E-08
	Inhalation Reference Dose	RfD _{int}	mg/kg-d								8-57E-03										1 70E-02	
	Hazard Quotlent	HQ	mg/kg-d								0.007078805										0.110394843	
	Total Hazard Index	HI	mg/kg-d																			
Carcinogenic risk - all routes																						
Carcinogenic risk - atl routes		C C4	h aotion	1 13E-09	0.00E+00	0 00E+00	7 24E-10	0 00E+00	1 66E-09	911E-08	5 91E-07	0 00E+00	0 00E+00	1 52E-09	0 00E+00	2.46E-08	0 00E+00	0.00E+00	0 00E+00	0.145.00	0 00E+00	0 00E+00
TOTAL CARCINOGENIC RISK Non-Carcinogenic risk - all ro		50m kt	fraction	1 136-09	0000	UWE+W	/ 245-10	U WE+00	1 000-07	7116-08	3715-07	00000	0000	1 3/25-07	D COLETON	2.400-08	0 WE+00	UWE+00	UWE+W	9 16E-09	0 002+00	U 00E+00
Non-Carcinogenic risk - ali ro																						
	: HAZARD INDEX - ALL ROUTES	Sum HI	fraction	0	0	0	0	0	0	0	0 007078805	0	0	0	0	0	0	0	0	0	0 110394843	

TABLE 7-2
RME RISK CALCULATIONS FOR ON-SITE WORKER (HIGH TCE SLOPE FACTOR)
AUSSOURI ELECTRIC WORKS

														Che	emicals of Pot	ential Concern			
Exposure Route	Parameter	Symbol	Units	Chlaroform	Dibenzo(a,h)Anthracene	Dibenzofuran	Hexachloro-1,3-Butadiene	Hexachizrobenzene	Indeno(1,23-cd)Pyrene	2-methyinaphthalane	Naphthalene	Nitrobenzene	Nitrosodi-n-propykamine	Pentachlorophenol	Tetrachloroethene	Trchloroethene	Vinyl Chloride	Total	% Contribution
Vapour Intrusion - Inhalation	POE concentration	Con	ug/m3	1.236-02	0,00E+00	5.62E-06	2.63E-03	8.52E-04	0.00E+00	5.09E-04	4.74E-03	7 64E-05	0.00E+00	0 00E+00	3,016-02	2.21E-01	6.16E-03		
Vapour minusion - minusion	POE concentration	Con	mg/m3	1,23E-05	0.00E+00	5.626-09	2.635-06	8.52E-07	0.00E+00	5.09E-07	4.74E-06	7.64E-08	0.005+00	0.00E+00	3.01E-05	2.215-04	6.16E-06	- 1	
	inhalation rate	lR	m3/hr	1202.00	0200.00	Side of		OMEL O/	0.00L.00	30/2 0/	-117-112-000	7.042-00	0202.00	5.502.00	3012-00	2.211-0-1	G.162-00	- 1	
	Exposure time	Ħ	h/d															Į.	
	Exposure frequency	EF	d/y																
	Exposure duration	ED	у,															i	
	Body weight	BW	kg																
	Averaging time carcinogens	AT _c	d																
	Averaging time non-cardnogens	ATn _e	d																
	Average intake from Inhalation cardinogens	L,	mg/kg-d	8.59659E-07	0	3 92787E-10	1.83813E-07	5.954715-08	0	3.55745E-08	3.31283E-07	5.33967E-09	0	0	2.103726-06	1.54459E-05	4.30528E-07		
	Inhalation Cancer Slope Factor	CSF _e	kg-d/mg	8 105-02	3.08E-01		7.70E-02	1 61E+00	3 08E-01						2.10E+00	4 00E-01	3 00E-02	i	
	Risk	R	fraction	6.96E-08	0.00E+00		1.425-08	9.59E-08	0.00E+00						4.425-06	6.18E-06	1.295-08		
	Total carcinogenic risk for exposure route	R,	fraction														[1.195-05	1009
	Average intake from inhalation non-carcinogens	L	mg/kg-d	2.40705E-06	0	1.0998E-09	5.14677E-07	1.66732E-07	0	9.96086E-08	9.27593E-07	1.49511E-08	0	0	5.89041E-06	4.32485E-05	1.20548E-06		
	Inhalation Reference Dose	RfD _{esh}	mg/kg-d								8.57E-04	5.71E-04			1.406-01	1 14E-02	2.86E-02		
	Hazard Quotient	HQ	mg/kg-d								0.001082372	2.6184E-05			4.20744E-05	0.003793731	4.21496E-05		
	Total Hazard Index	HI	mg/kg-d														t	1.28E-01	1009
Carcinogenic risk - all routes (1 17E-05	
Carcinogenic risk - all routes (TOTAL CARCINOGENIC RISK -		Sum Rt	fraction	6.96E-08	0.00E+00	0.00E+00	1 42E-08	9.59E-08	0 00E+00	0.00E+00	0.00E+00	0.00E+00	0 00E+00	0 00E+00	4 42E-06	6.18E-06	1.29E-08	1.45E-07 1 19E-05	
Von-Carcinogenic risk - all rou		30III KI	"GCIDI	0.702-00	0.000-00	0.002-00	1 -21-00	7.2712-06	U LUC-UU	<u> </u>	<u> </u>	U.UUE-UU	0002-00	0000-00	4 422-00	0.100-06	1.270-08	1.28E-01	
Non-Carcinogenic risk - all rou Non-Carcinogenic risk - all rou																		2.62E-04	
	HAZARD INDEX - ALL ROUTES	Cum Lift	traction	0	0	0	0	n	0		0.001082372	2.6184E-05	0		4 007445 05	0.000700701	4 21496E-05	1.28E-01	

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TABLE 7-3
RME RISK CALCULATIONS FOR ON-SITE WORKER (MODERATE TCE SLOPE FACTOR)
AMSSOURI ELECTRIC WORKS

																Che	micals of Poter	ntial Concern				
ource Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbol	Unats	Non Contaminant- Specific Parameters	1,1,2,2-Tetrachlarcethane	1,1,2-Trichloroethane	1,1-Dichlaroethane	Total 1,2 Dichloroethene	1,2,4 Trichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2.4.6-Trichlorophenol	2.4-Dinitratotuene	2,6-Dinitrotoluene	2-Chlorophenol	3,3-Dichlorobenzidine	
										-											***	
roundwater	Air	Indoor air	Vapour intrusion - inhalation	POE concentration	Contr	ug/m3		1.965-04	3.13E-04	9.75E-02	6.14E-02	2.96E-02	7.31E-04	5.35E-04	2.33E-01	2.28E-01	0.00E+00	0.00E+00	3.93E-03	3 93E-03	0.00E+00	0.00E+
				POE concentration	Com	mg/m3		1.96E-07	3 13E-07	9.75E-05	6.14E-05	2.96E-05	7.31E-07	5.35E-07	2.33E-04	2.28E-04	0.00E+00	0.00E+00	3.935-06	3.93E-06	0.00E+00	D 00E4
				inhalation rate	1R	m3/hr	2															
				Exposure time	Eī	h/d	10															
				Exposure frequency	EF	d/y	250															
				Exposure duration	ED	У	25															
				Body weight	BW	kg	70															
				Averaging time carcinogens	AT _c	d	25,550															
				Averaging time non-caranogens	ATn _e	đ	9,125															
				Average intake from inhalation carcinogens	i,	mg/kg-d		1.36986E-08	2.18759E-08	6.81437E-06	4.29131E-06	2.06877E-06	5.10903E-08	3 73917E-08	1.62846E-05	1.59351E-05	0	0	2.74672E-07	2.74672E-07	0	
				Inhalation Cancer Slope Factor	CSF.	kg-d/mg		2.036-01	5.70E-02				9 10E-02			2.20E-02	1 09E-02					
				Risk	R	fraction		2.78E-09	1.256-09				4.65E-09			3.51E-07	0.00€+00					
				Total carcinogenic risk for exposure route	R,	traction																
				Average intake from inhalation non-carcinogens	L	mg/kg-d		3.835625-08	6.12524E-08	1 90802E-05	1,201576-05	5.79256E-06	1.43053E-07	1.04697E-07	4.55969E-05	4 46184E-05	0	0	7.6908E-07	7 6908E-07	0	
				Inhalation Reference Dose	RfD _{mb}	mg/kg-d						1.14E-03		1 14E-03		2.30E-01	-	-			-	
				Hazard Quotient	HQ	mg/kg-d							0.000102181	9.18392E-05		0 000193993						
				Total Hazard Index	HE.	mg/kg-d							0.000702.00	7,1.00 00		0 000170770						
			Carcinogenic risk - all routes (Carcinogenic risk - all routes (detected organics)		***													···			
			TOTAL CARCINOGENIC RISK -		Sum Rt	fraction		2.78E-09	1.25E-09	0 00E+00	0 00E+00	0.00E+00	4 65E-09	0 00E+00	0.00E+00	3 51E-07	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E
			Non-Carcinogenic risk - all roo												2.342 34	53,20,	2 232 30	2 232 00	2 302 00	2 202.00	- 0 000.00	3 002
			Non-Carcinogenic risk - all rou																			
			TOTAL NON-CARCINOGENIC		Cum Lift	fraction		0		0	_	0.005081196	0.000100101	0.10000C OF		0 000193993	0			n		

Notes: 1- ug/l = micrograms per Liter

2- ug/m3 = micrograms per cubic mater

3- h/d = hours per day

4- Vd = Hers per day 5- d/y = days per year

6-y ≠ yecar 7-kg = kBogram 8-d = day

9- hr = hour

10- mg/kg-d = maligrams per idiogram per day 11- kg-d/mg = kilograms per day per miliigram

12- m3/hr = cubic meter per hour 13- mg/m3 ≈ milligrams per cubic meter

TABLE 7-3
RME RISK CALCULATIONS FOR ON-SITE WORKER (MODERATE TCE SLOPE FACTOR)
AUSSOURI ELECTRIC WORKS

																			Chemica	ils of Potential (Concern	
Exposure Route	Parameter	Symbol	Units	Aroclor-1016	Arocka-1221	Aroctor-1232	Arocior-1242	Aroctor-1248	Aroclor-1254	Aroctor-1260 (Filtered)	Вепzепе	Berzo(a)anitracene	Berzo(a) pyrene	Benzo(b)flucranthene	Benzo(k)flucranihene	bs(2-Chkroelhy)) Elher	bs(2-Chlorosopropyl) Ether	Bis (2-ethythexyl phithalate)	Bromodichlorome!hane	Carbon Telrachlonde	Chlorobenzene	Chlorodibromomelhane
<u></u> .					 																	
Vapour intrusion - inhalation	POE concentration	Con	ug/m3	4.05E-05	0.00E+00	0.00E+00	2.59E-05	0.00E+00	5.92E-05	3.26E-03	3 106-01	0.00E+00	0.00E+00	7.06E-05	0.00E+00	3.04E-04	0.00E+00	0.00E+00	4.20E-03	2.52E-03	9.59E+00	1.49E-04
·	POE concentration	Con	mg/m3	4.05E-08	0.00E+00	0.00E+00	2.59E-08	0.00E+00	5.92E-08	3.26E-06	3 10E-04	0.00E+00	0.00E+00	7.06E-08	0.00E+00	3.04E-07	0.00E+00	0.00E+00	4 20E-06	2.52E-06	9.59E-03	1.49E-07
	Inhalation rate	IR	m3/hr																			,.
	Exposure time	ÉT	h/d																			
	Exposure frequency	Œ	₫/y																			
	Exposure duration	ED.	y																			
	Body weight	BW AT _e	kg																			
	Averaging time carcinogens	ATn _e	u u																			
	Averaging time non-carcinogens	All fe	G																			
	Average intake from inhalation carcinogens	l _a	mg/kg-d	2.83058E-09	0	0	1.81018E-09	0	4.13755E-09	2.27845E-07	2.16662E-05	0	0	4.9343E-09	0	2.12469E-08	o	0	2.93542E-07	1.76125E-07	0.000670254	1.04138E-08
	Inhalation Cancer Slope Factor	CSF.	kg-d/mg	4.00E-01	4.006-01	4.00E-01	4.00E-01	4.00E-01	4 00E-01	4 00E-01	2.73E-02	3.08E-01	3.08E+00	3.08E-01	3.08E-01	1 16E+00	_	_		5.20E-02		
	Risk	R	fraction	1.13E-09	0.00E+00	0.00E+00	7.24E-10	0.00E+00	1.66E-09	9.11E-08	5.91E-07	0.00E+00	0.005+00	1.525-09	0.00E+00	2.46E-08				9 16E-09		
	Total carcinogenic risk for exposure route	R _t	fraction																			
	Average Intake from Inhalation non-carcinogens	l _o	mg/kg-d	7 92564E-09	0	0	5.06849E-09	0	1.158516-08	6.37965E-07	6.06654E-05	0	0	1.3816E-08	0	5.94912E-08	0	0	8.219185-07	4 93151E-07	0 001876712	2.91585E-08
	Inhalation Reference Dose	RfD _{mh}	mg/kg-d								8.57E-03										1 70E-02	
	Hazard Quotlent	HQ	mg/kg-d								0.007078805										0.110394843	
	Total Hazard Index		mg/kg-d																			
Carcinogenic risk - all routes	(detected organics)																					
Caranogenic risk - all routes																						
TOTAL CARCINOGENIC RISK		Sum Rt	fraction	1 13E-09	0 00E+00	0 00E+00	7 24E-10	0 00E+00	1 66E-09	911E-08	5.91E-07	0 00E+00	0 00E+00	1.52É-09	0 00E+00	2 46E-08	0 00E+00	0 00E+00	0 00E+00	9 16E-09	0 00E+00	0 00E+00
Non-Caranogenia risk - ali ra																						
Non-Caranogenic risk - all ra																						
TOTAL NON-CARCINOGENIC	HAZARD INDEX - ALL ROUTES	Sum Hi	fraction	0	0	0	0	0	0	0	0 007078805	0	0	0	0	0	0	0	0	0	0 110394843	

TABLE 7-3
RME RISK CALCULATIONS FOR ON-SITE WORKER (MODERATE TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

		"			·									C	hernicals of Pot	ential Concern)		[
Exposure Route	Parameter	Symbol	Units	Chloroform	Dibenzo(a,h)Anthracene	Dibenzofuran	Hexachloro-1,3-Butadiene	Hexachlorobenzene	Indeno(1,2,3-cd)Pyrene	2-methytraphthalane	Naphihalene	Niroberzene	Nitrosodi-n-propy/amine	Pentachlorophenol	Tetrachlaraethene	Trichloroethene	Viryl Chloride	Total	% Contribution
Name of later stars introduction	POS concentration	Con		1,235-02	0.00€+00	5.62E-06	2.63E-03	8.52E-04	0.00E+00	5,09E-04	4 74E-03	7.64E-05	0.00€+00	0.00E+00	3.01E-02	2.21E-01	6.16E-03		
Vapour Intrusion - inhalation			_	1,235-05	0.005+00	5.62E-09		8.52E-07	0.00E+00	5.09E-07									
	POE concentration	C _{ode}	mg/m3	1,230-03	0.000=00	3.025-07	2.030-00	6.525-07	0.002+00	5.076-07	4.74E-06	7.64E-08	0.00E+00	0.00E+00	3.01E-05	2215-04	6.16E-06		
	Inhalation rate Exposure time	E2 1K	m3/hr h/d																l
	Exposure frequency	EF	d/y																l
	Exposure duration	ΕD	u,,																
	Body weight	BW	ka																
	Averaging time carcinogens	AT _c	ď																
	Averaging time non-cardinogens	ATn _c	d																
	Average intake from inhalation carcinogens	Ļ,	mg/kg-d	8.59659E-07	0	3.92787E-10	1.83813E-07	5.95471E-08	0	3.55745E-08	3.312836-07	5.33967E-09	0	0	2.10372E-06	1.54459E-05	4.30528E-07		
	Inhaiation Cancer Slope Factor	CSF.	kg-d/mg	8 10E-02	3 08E-01		7 70E-02	1.61E+00	3.08E-01						2.10E+00	2.00E-02	3.00E-02		
	Risk	R	fraction	6.96E-08	0.00E+00		1.42E-08	9.596-08	0.00E+00						4.42E-06	3.09E-07	1.29E-08		
	Total carcinogenic risk for exposure route	R _t	fraction															6.00E-06	100%
	Average intake from inhalation non-carcinogens	l _e	mg/kg-d	2.40705E-06	0	1.0998E-09	5.14677E-07	1.66732E-07	0	9.96086E-08	9.27593E-07	1 4951 1E-08	0	0	5.89041E-06	4.32485E-05	1.20548E-06		
	inhalation Reference Dose	RfD _{inth}	mg/kg-d								8.57E-04	5.71E-04			1.40E-01	1 14E-02	2.86E-02		
	Hazard Quotient	HQ	mg/kg-d								0 001082372	2.6184E-05			4.20744E-05	0.003793731	4.21496E-05		
	Total Hazard Index	Ht	mg/kg-d			_												1.285-01	100%
Carcinogenic risk - ali routes ((detected organics)																	5 85E-06	
Carcinogenic risk - all routes																		1 45E-07	
TOTAL CARCINOGENIC RISK -		Sum Rt	fraction	6 96E-08	0 00E+00	0 00E+00	1.42E-08	9 59E-08	0 00E+00	0 00€+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	4 42E-06	3 09E-07	1 29E-08	6.00E-06	
Non-Carcinogenic risk - all ro																		1 28E-01	
Non-Carcinogenic risk - all ro	utes (undetected organics)							<u> </u>										2 62E-04	
TOTAL NON-CARCINOGENIC	HAZARD INDEX - ALL ROUTES	Sum HI	traction	0	0	0	0	0	0	0	0 001082372	2.6184E-05	0	0	4 20744E-05	0 003793731	4 21496E-05	1.28E-01	L

TABLE 7-4
RME RISK CALCULATIONS FOR ON-SITE WORKER (LOW TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

																Che	micals of Pote	ntial Concern				
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbol	Units	Non Contaminant- Specific Parameters	1,1,22-Tefrachkroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	Total 1,2 Dichloroethene	1,2,4 Trichlorobenzene	1,2-Dichlaroethane	1,2-Dichlaropropane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2.4.6-Trichlorophenol	2,4-Dinitrotolvene	2.6-Dhilirolobene	2-Chlorophenol	3,3-Dichlorobenzidine	4.6-Dinito-2-Melhyl Phenol
			Manager Internation	POF apparatulate		/m3		1.96E-04	2 125 04	9 75E-02	4.14E.00	20/5 00	791504	5 95E 04	2 225 01	0.000 01	0007100	0.005.00	0.005.00			0.005.00
Groundwater	Air	Indoor air	Vapour intrusion - Inhalation		Con	ug/m3			3.13E-04		6.14E-02	2.96E-02	7.315-04	5.35E-04	2.335-01	2,285-01	0.00E+00	0.00E+00	3 93E-03	3.93E-03	0.00E+00	0.00E+00
				POE concentration	Con	mg/m3	_	1.96E-07	3.13E-07	9.75E-05	6.14E-05	296E-05	7.315-07	5.35E-07	2.33E-04	2.28E-04	0.00E+00	0.00E+00	3 93E-06	3 936-06	0.00E+00	0.00E+00
				Inhalation rate	IR .	m3/hr	2															
				Exposure time	ET	h/d	10															
				Exposure frequency	EF	d/y	250															
				Exposure duration	ED	y h-	25															
				Body weight	BW	kg	70															
				Averaging time cardnogers	AT _c	ď	25,550															
				Averaging time non-carcinogens	Aīn _c	d	9,125															
				Average Intake from Inhalation carcinogens	L,	mg/kg-d		1,36986E-08	2.18759E-08	6.81437E-06	4.29131E-06	2.068776-06	5 10903E-08	3.73917E-08	1.62846E-05	1,59351E-05	0	0	2.74672E-07	2.74672E-07	0	(
				Inhalation Cancer Slope Factor	CSF.	kg-d/mg		2.03E-01	5 70E-02				9.10E-02			2.20E-02	1.09E-02	•			_	-
				Risk	R	traction		2.78E-09	1.25E-09				4.65E-09			3.51E-07	0.00E+00					
				Total caranogenic risk for exposure route	R,	fraction											0.002 00					
				Average Intake from inhalation non-carcinogens	l.	mg/kg-d		3.835436-08	6.12524E-08	1 908025.05	1 201575-05	5.79256E-06	1.43053E-07	1.04697E-07	4.55969E-05	4 461845.05	a	0	7.6908E-07	7.6908E-07	0	
				Inhalation Reference Dose	RfD	mg/kg-d			0.120242.00	1700022.00	12015/200	1145-03		1.14E-03	400/0/200	2.306-01	·	Ū	7.0700L-07	7.0700L-07	Ū	,
				Hazard Quotient	HQ	mg/kg-d							0.000102181			0.000193993						
				Total Hazard Index	н	mg/kg-d						0.000001170	0.000102101	, 100,22-00		0.000173773						
_				Total Trazaila Iraex		III NA CA																
			Carcanogenic risk - all routes																			
			Caranogenic risk - all routes																			
			TOTAL CARCINOGENIC RISK		Sum Rt	traction		2.78E-09	1 25E-09	0 00E+00	0 00E+00	0.00E+00	4 65E-09	0 00E+00	0 00 E+ 00	3 51E-07	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0.00E+00
			Non-Carcinogenic risk - all ro																			
			Non-Carcinogenic risk - all ro																			
			TOTAL NON-CARCINOGENIC	HAZARD INDEX - ALL ROUTES	Sum Hi	fraction		0	0	0	0	0 005081196	0 000102181	9 18392E-05	0	0 000193993	0	0	0	0	0	

ug/l = micrograms per Liter
 ug/m3 = micrograms per cubic meter
 h/d = hours per day

4- I/d = liters per day

5- d/y = days per year 6- y = year 7- kg = kilogram 8- d = day 9- hr = hour

10- mg/kg-d = milligrams per kilogram per day 11- kg-d/mg = kilograms per day per milligram 12- m3/hr = cubic meter per hour

13- mg/m3 = milligrams per cubic meter

TABLE 7-4
RME RISK CALCULATIONS FOR ON-SITE WORKER (LOW TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

			-				· · · · · · · · · · · · · · · · · · ·												Chemico	ts of Potential	Concern	
Exposure Route	Parameter	Symbol	Units	Arocka-1016	Aroclor-1221	Aroclor-1232	Arockr-1242	Aroctor-1248	Aroclor-1254	Aroctor-1260 (Filtered)	Вепzепе	Benzo(a)anitracene	Велго(а)ругеле	Benzo(b)fluoranthene	Benzo(k)flucranihene	bs(2-Chkroethy)) Ether	bs(2-Chlorokopropyl) Elher	8s (2-ethythexy) phthalate)	Bromodichloromethane	Carbon Teltachloride	Chlorobenzene	Chlorodibromomethane
				4000.00		0.005.00																
Vapour intrusion - inhalation		Con	ug/m3	4.05E-05	0.00E+00	0.00E+00	2.59E-05	0 00E+00	5.92E-05	3 26E-03	3.106-01	0.00E+00	0 00E+00	7.06E-05	0.00E+00	3 04E-04	0.00E+00	0.00E+00	4.20E-03	2.52E-03		1.49E-04
	POE concentration	Con	mg/m3	4.05E-08	0,00E+00	0.00E+00	2.59E-08	0.00E+00	5 92E-08	3.26E-06	3.106-04	0.00E+00	D 00E+00	7.06E-08	0 00E+00	3.04E-07	0.00E+00	0.00E+00	4.20E-06	2.526-06	9.59E-03	i.49E-07
	Inhalation rate	IR.	m3/hr																			
	Exposure time	E)	h/d d/y																			
	Exposure frequency Exposure duration	ED	u/y																			
	Body weight	BW	ka																			
	Averaging time carcinogens	AT _c	ď																			
	Averaging time non-carcinogens	Aīn _c	đ																			
	Average intake from inhalation carcinogens	Į,	mg/kg-d	2.830586-09	. 0				4.13755E-09		2.16662E-05	0	0	4.9343E-09		2.12469E-08	0	0	2.93542E-07	1.76125E-07	0.000670254	1 04138E-08
	Inhalation Cancer Slope Factor	CSF.	kg-d/mg	4 00E-01	4 00E-01	4.00E-01	4 00E-01	4 00E-01	4 00E-01	4.00E-01	2.735-02	3.08E-01	3 08E+00	3.08E-01	3.08E-01	1.16E+00				5.20E-02		
	Risk	R	fraction	1.136-09	0.00E+00	0.00E+00	7.24E-10	0.00E+00	1.66E-09	9.11E-08	5.91E-07	0.00E+00	0.00E+00	1.525-09	0 00E+00	2.46E-08				9.16E-09		
	Total carcinogenic risk for exposure route	R,	fraction																			
	Average intake from inhalation non-carcinogens	l _o	mg/kg-d	7,92564E-09	0	0	5.06849E-09	0	1.15851E-08	6.37965E-07	6.06654E-05	0	0	1.3816E-08	0	5 94912E-08	0	0	8.219186-07	4 93151E-07	0.001876712	2 91 585E-08
	Inhalation Reference Dose	RfD _{int}	mg/kg-d								8.57E-03										1.70E-02	
	Hazard Quotient	HQ	mg/kg-d								0.007078805										0.110394843	
	Total Hazard Index	н	mg/kg-d																			
Carcinogenic risk - all routes (
Carcinogenic risk - all routes (
TOTAL CARCINOGENIC RISK -		Sum Rt	fraction	1 13E-09	0.00E+00	0 00E+00	7 24E-10	0 00E+00	1 66E-09	9 11E-08	5 91E-07	0.00E+00	0 00E+00	1.52E-09	0 00E+00	2.46E-08	0 00E+00	0 00E+00	0.00E+00	9 16E-09	0 00E+00	0 00E+00
Non-Cardinogenic risk - all rou																						
Non-Carcinogenic risk - all rot	utes (undetected organics) HAZARD INDEX - ALL ROUTES	Sum Lil	fraction	0	0	0		0	0		0 007078805	0	0	0	0	0	0				0 110394843	
ICIAL NON-CARCINOGENIC	HAZAKU INDEX - ALL KOUIES	JUITI III	II GC IOTI							<u> </u>	_U.U./U/00U3					U					_0 110394643	

TABLE 7-4
RME RISK CALCULATIONS FOR ON-SITE WORKER (LOW TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

							_							0	nemicals of Pot	ential Concern	1		
Exposure Route	Parameter	Symbol	Units	Chlaroform	Dibenzo(a,h)Anthracene	Dibenzofuran	Hexachloro-1,3-Butadlene	Нехаснюторетиеле	Indeno[1,2,3-cd]Pyrene	2-methyktaphthalane	Naphthalene	Niroberzene	Nirosodi-n-propy/amine	Pentachlorophenol	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Total	-
Vapour intrusion - inhalation	POE concentration	<u> </u>	ug/m3	1,23E-02	0.00€+00	5.62E-06	2,636-03	8.52E-04	0.005+00	5.09E-04	4.74E-03	7.64E-05	0.00E+00	0.00E+00	3.015-02	2.21E-01	6.16E-03		
•	POE concentration	Con	mg/m3	1,236-05	0.00E+00		2635-06	8.52E-07	0.00E+00	5.09E-07	4.74E-06	7.64E-08	0.00E+00	0.00E+00					
	Inhaighon rate	Co-tn	m3/hr	1.200-00	U.LUE-GO	3.021-07	2000-06	0.325-07	0.000-00	3076-07	4.740-00	7 04E-US	0.000	0.005-00	3.012-05	2.21E-04	6.16E-06		
	Exposure time	IR Ta	h/d																
	Exposure frequency	EF	d/y																
	Exposure duration	ĒD	у,																
	Body weight	BW	ko															į	
	Averaging time carcinogens	AT _c	ď															1	
	Averaging time non-carcinogens	ATn _e	d															ì	ı
	Average intake from inhalation carcinogens	l _a	mg/kg-d	8.59659E-07	0	3.92787E-10	1.83813E-07	5.95471E-08	0	3.55745E-08	3.31283E-07	5.33967E-09	0	0	2.103726-06	1.54459E-05	4.30528E-07		
	Inhalation Cancer Slope Factor	CSF _e	kg-d/mg	8 105-02	3 08E-01		7.70E-02	1.61 E+0 0	3 08E-01						2.10E+00	6.00E-03	3.00E-02	Ī	
	Risk	R	fraction	6.96E-08	0.00E+00		1.425-08	9.59E-08	0.00E+00						4.426-06	9.27E-08	1.296-08		
	Total carcinogenic risk for exposure route	Rt	fraction															5,785-06	100
	Average intake from inhalation non-carcinogens	۱ _ه	mg/kg-d	2.40705E-06	0	1.09985-09	5.14677E-07	1 66732E-07	0	9.96086E-08	9.27593E-07	1.49511E-08	0	0	5.89041E-06	4.32485E-05	1 20548E-06		
	Inhalation Reference Dose	RfD _{inh}	mg/kg-d								8.57E-04	5.71E-04			1.406-01	1 145-02	2.86E-02		
	Hazard Quotient	HQ	mg/kg-d								0.001082372	2.6184E-05			4.20744E-05	0.003793731	4.21496E-05		
	Total Hazard Index	HI	mg/kg-d								· · · · · ·							1.262-01	100
carcinogenic risk - all routes (5.64E-06	
Carcinogenic risk - all routes (Sum Ri	fraction	6 96E-08	0 00E+00	0 00E+00	1 42E-08	9 59E-08	0.00E+00	0 00E+00	0.00€+00	0.00E+00	0.00E+00	0 00E+00	4.400.07	0.076 88	1.005.00	1 45E-07	
OTAL CARCINOGENIC RISK - Ion-Carcinogenic risk - all rou		Sum Ki	HOCHON	0 700-08	U UUC+UU	0.005+00	1 4ZE-08	y 3yE-U8	U UUC+00	V WE+W	0.002-00	U LUC-UU	0.000+00	0002+00	4 42E-06	9 27E-08	1 29E-08	5.78E-06	
ion-Carcinogenic risk - ali rou Ion-Carcinogenic risk - ali rou																		1 28E-01 2.62E-04	
OF COLORIDGE BC 188 - OH IOC	HAZARD INDEX - ALL ROUTES	Sum HI	fraction			0		0			0 001082372				4 20744E-05			1.28E-01	

TABLE 7-5
CTE RISK CALCULATIONS FOR ON-SITE WORKER (HIGH TCE SLOPE FACTOR)
AMSSOURI ELECTRIC WORKS

														Ch	emicals of Pote	ential Concern					
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Paramater	Symbo	Units	Non Contaminant- Specific Parameters	1,1,2,2-Tefrachloroethane	1,1,2-Thchloroethane	1,1-Dichloroethane	Total 1,2 Dichloroethene	1,2.4 Trichlorobenzene	1,2-Dichlaroethane	1,2-Dichloropropane	1,3-Dichlorobenzene	1,4-Dichlarobenzene	2.4.6-Trichlorophenol	2.4-Dinitrolokuene	2,6-Dinitrotoluene	2-Chlorophenol	3,3-Dichlorobenadine
																				· · · ·	
Groundwater	Air	Indoor air	Vapour intrusion - inhalation		Com	ug/m3		1 96E-04	3.13E-04	9.756-02	6.14E-02		7.31E-04	5.35E-04	2.33E-01	2,285-01	0.00E+00	0.00E+00	0.00E+00	3.93E-03	0 00E+00
				POE concentration	Com	mg/m3		1.96E-07	3.13E-07	9.75E-05	6.14E-05	2.96E-05	7.31E-07	5.35E-07	2.33E-04	2.28E-04	0.00E+00	0'00E+00	0.00E+00	3.93E-06	0.00E+00
				Inhalation rate	<u>IR</u>	m3/hr	1.6														
				Exposure time	ET	h/d	10														
				Exposure frequency	EF	d/y	219														
				Exposure duration Body weight	ED BW	y	6.6 70														
					AT _c	kg d	25,550														
				Averaging time carcinogens	ATn _e	-	2,350 2,409														
				Averaging time non-cardinogens	Aine	đ	2,407														
				Average intake from inhalation carcinogens	L _a	mg/kg-d		2.5344E-09	4.04728E-09	1.26073E-06	7.9394E-07	3.82746E-07	9.45228E-09	6.91788E-09	3.01283E-06	2.94818E-06	0	0	0	5.08173E-08	0
				Inhalation Cancer Slope Factor	CSF.	kg-ct/mg		2,03E-01	5.70E-02				9 10E-02			2.20E-02	1.09E-02		_		
				Risk	R	fraction		5.14E-10	2.31E-10				8.60E-10			6.49E-08	0.00E+00				
				Total carcinogenic risk for exposure route	R _t	fraction															
				Average Intake from inhalation non-carcinogens	<u>ا</u>	mg/kg-d		2.688E-08	4.29257E-08	1.337145-05	8.42057F-06	4.05943E-06	1.002515-07	7.33714E-08	3.195435-05	3.12686E-05	0	0	0	5.38971E-07	n
				inholation Reference Dose	RfD _{int}	mg/kg-d						1 14E-03	1.40E-03	1.14E-03	5	2.30E-01	•	•	·	0.0077 12 07	•
				Hazard Quotient	HQ	mg/kg-d						0.003560902	7.16082E-05			0.00013595					
				Total Hazard Index	HI	mg/kg-d								0.1000.00		0.000.00.0					
_																					
			Caranogenic risk - all routes																		
			Caranogenic risk - all routes																		
			TOTAL CARCINOGENIC RISK		Sum Rt	fraction		5 T4E-10	2.31E-10	0.00E+00	0 00E+00	0 00E+00	8 60E-10	0 00E+00	0 00E+00	6 49E-08	0 00E+00	0 00E+00	0.00E+00	0.00E+00	0 00E+00
			Non-Carcinogenic risk - all ro										<u>-</u>								
			Non-Carcinogenic risk - all ro																		
			TOTAL NON-CARCINOGENIC	HAZARD INDEX - ALL ROUTES	Sum Hi	fraction		0	0	0	0	0 003560902	7 16082E-05	6 43609E-05		0.00013595	0	0	0		0

Notes: 1- ug/l = micrograms per Liter

2- ug/m3 = micrograms per cubic meter 3- h/d = hours per day

4- l/d = liters per day 5- d/y = days per year

6- y = year

7- kg ≈ kilogram 8- d = day

9- hr = hour

10-mg/kg-d ≈ milligrams per kilogram per day

11- kg-d/mg = kilograms per day per milligram 12- m3/hr = cubic meter per hour

13- mg/m3 = mttigrams per cubic meter

TABLE 7-5 CTE RISK CALCULATIONS FOR ON-SITE WORKER (HIGH TCE SLOPE FACTOR) MISSOUM ELECTRIC WORKS

		···											· · · · · ·	· · · · · ·	Chemicas	of Potential C	oncem	.	-			
Exposure Route	Paramater	Symbo	Units	4,6-Dinitro-2-Methyl Phenol	Aroclor-1016	Aroclor-1221	Aroctor-1232	Aroctor-1242	Aroctor-1248	Aroclor-1254	Aroclor-1260 (Filtered)	Веп <i>т</i> епе	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranihene	Benzo(k}fluoranthene	bs(2-Chloroeity!) Eih <i>er</i>	bs(2-Chlorolsopropyr) Ether	Bs (2-ethylhexyl phthakale)	Bromodichloromethane	Carbon Telrachbride	
Veneral Interview inheritation	POE concentration			0.00E+00	4.05E-05	0.00€+00	0.00€+00	2,596-05	0.00E+00	5.92E-05	3.26E-03	3.105-01	0.00E+00	0.00E+00	7 06E-05	0.005+00	3.04E-04	0.005+00	0.00E+00	100E 03	D 600 603	0.6054
Vapour Intrusion - inhalation	POE concentration	Con	ug/m3 mg/m3	0.00E+00	4.05E-08	0.00E+00	0.00E+00	2.59E-08	0.00E+00	5.92E-08	3.26E-06	3.10E-01 3.10E-04	0.00E+00	0.006+00	7.06E-05	0.00E+00 0.00E+00	3.04E-07	0.00E+00 0.00E+00	0.00E+00	4.20E-03 4.20E-06	2.52E-03 2.52E-06	9.59E+0 9.59E-0
	Inhalation rate	C _{o-In} IR	m3/hr	0.002-00	4445-00	OLOC-GO	0.002-00	2.371-00	0.00E-00	3.722-06	3.250-06	3.105-04	0306-00	U LUCE-CO	7,065-06	0.000-00	3.046-07	O GOE+GO	0.002+00	4.206-06	2.526-06	y 3yE-0
	Exposure time	Ë	h/d																			
	Exposure frequency	EF	d/y																			
	Exposure duration	ED.	y																			
	Body weight	BW	kg _																			
	Averaging time carcinogens Averaging time non-carcinogens	AT _c ATn _c	d d																			
				_		_	_		_													
	Average Intake from inhalation carcinogens	ام م	mg/kg-d	0		0		3.34903E-10		7.65492E-10		4.00849E-06	0		9 12901E-10		3 93091E-09	0	0	5 43086E-08	3.25851E-08	0.00012400
	Inhalation Cancer Slope Factor Risk	CSF _e	kg-d/mg fraction		4.00E-01 2.09E-10	4 00E-01 0.00E+00	4.00E-01 0.00E+00	4.00E-01 1.34E-10	4 00E-01 0.00E+00	4.00E-01 3.06E-10	4 00E-01 1.69E-08	2.73E-02 1.09E-07	3 08E-01 0.00E+00	3.08E+00 0.00E+00	3.08E-01 2.81E-10	3 08E-01 0.00E+00	1 16E+00 4.56E-09				5 20E-02	
	Total carcinogenic risk for exposure route	R,	fraction		20/10	QAAL-00	0 0002100	124210	0.002-00	3.002-10	1.072-00	12070-07	0002100	0.002100	2015-10	0.00E-00	4.500-07				1.69E-09	
	Average intake from inhalation non-carcinogens	h	mg/kg-d	0	5.55429E-09	0	0	3.552E-09	0	8.11886E-09	4 47086E-07	4.25143E-05	0	0	9.68229E-09	0	4.16914E-08	0	0	0.000000576	3.456E-07	0 001315
	Inhalation Reference Dose	RfD _{int}	mg/kg-d									8.57E-03		_				_	_			1.70E-0
	Hazard Quotient	HQ	mg/kg-d									0.004960827										0.07736470
	Total Hazard Index	HI	mg/kg-d						_													
Carcinogenic risk - all routes (
Carcinogenic risk - ali routes (TOTAL CARCINOGENIC RISK -		Sum Di	fraction	0 00E+00	2.09E-10	0 00E+00	0.00E+00	1.34E-10	0 00E+00	3 06E-10	1 69E-08	1.09E-07	0.00E+00	0.00E+00	2.81E-10	0.00E+00	4.56E-09	0 00E+00	0.00E+00	0 00E+00	1 69E-09	0 00E+0
Non-Carcinogenic risk - all ro		JUITE	HOCKET	0000	2071-10	U GOL.GO	0306-00	1.0-K-10	U COC-CO	3 002-10	1 071-06	1,375-07	0.002-00	U.UL-UU	2.615-10	UULTU	4.30E-UY	U GOLETOD	U UUE+UU	0002-00	1 675-07	0 000=01
Non-Carcinogenic risk - all ro																						
	HAZARD INDEX - ALL ROUTES	Sum HI	fraction	0	0	0	0	0	0	0	0	0 004960827	0	0	0	0	0	0	0	0	0	0 07736470

TABLE 7-5
CTE RISK CALCULATIONS FOR ON-SITE WORKER (HIGH TCE SLOPE FACTOR)
AMSSOURI ELECTRIC WORKS

						 	•					Ch	emicals of Pote	ntlal Concern			•			
Exposure Route	Paramater	Symbol	Units	Chlarodibromomethane	Chloroform	Dibenzo(a,h)Anihracene	Dibenzofuran	Hexachloro-1,3-Butadiene	Нехаснатоснателе	Indeno(1,2,3-cd)Pyrene	2-methymaphthalene	Naphthaiene	Nirobenzene	Nitrosodi-n-propylamine	Pentachlorophenol	Tetrachioroethene	Trichloroethene	Vinyi Chloride	Tota	
	POS concentration		ug/m3	1.49E-04	1.23E-02	0,00E+00	5 625-06	2,636-03	8.52E-04	0.00E+00	5.09E-04	4.74E-03	7.64E-05	0.00E+00	0.00E+00	3.015-02	2.215-01	6 16E-03		
Vapour intrusion - Inhalation		Con	-	1.49E-04		0.0000	5.62E-09	2.63E-06	8.52E-07										,	i
	POE concentration	Calu	mg/m3 m3/hr	1.496-07	1.23E-05	OUCHOU	3.0ZE-U7	2.030-00	8.325-0/	0 00E+00	5.09E-07	4 74E-06	7.64E-08	0.00E+00	0,0000	301E-05	2.21E-04	6 16E-06		ı
	inhaiation rate	ir et	ms/m h/d																	1
	Exposure fime Exposure frequency	EF	d/y																	1
	Exposure duration	ED	u,,																	1
	Body weight	BW	ka																	i
	Averaging time carcinogens	AT _c	d																	l .
	Averaging time non-carcinogens	ATne	ď																	l
	Average intake from Inhalation carcinogens	l _e	mg/kg-d	1.92666E-09	1.59047E-07	σ	7.267E-11	3 40075E-08	1.101 <i>69E-0</i> 8	0	6.58168E-09	6.12911E-08	9.87899E-10	0	0	3.89211E-07	2.85767E-06	7.96526E-08		l
	Inhalation Cancer Slope Factor	CSF _e	kg-d/mg		8 10E-02	3.08E-01		7.70E-02	1.61E+00	3.08E-01						2.10E+00	4.00E-01	3.00E-02		1
	Rtsk	R	fraction		1.29E-08	0.00E+00		2.62E-09	1.77E-08	0.00E+00						8.17E-07	1.14E-06	2.39E-09		l
	Total cardinogenic risk for exposure route	R _t	fraction															[2.20E-08	100
	Average intake from inhalation non-carcinogens	l _o	mg/kg-d	2.04343E-08	1.68686E-06	0	7.70743E-10	3.60686E-07	1 16846E-07	0	6.98057E-08	6.50057E-07	1.04777E-08	0	0	0 000004128	3.03086E-05	8.448E-07		l
	Inhalation Reference Dose	RfD _{inh}	mg/kg-d									8.57E-04	5.71E-04			1.40E-01	1 145-02	2.86E-02		1
	Hazard Quotient	HQ	mg/kg-d									0.000758526	1.83498E-05			2.94857E-05	0.002658647	2.95385E-05		ı
	Total Hazard Index	HI	mg/kg-d															11	8.97E-02	100
Caranogenic risk - all routes ((detected organics)																		2.17E-06	
Caranogenic risk - all routes (- ·		2.68E-08	
TOTAL CARCINOGENIC RISK -		Sum Rt	fraction	0.00E+00	1 29E-08	0 00E+00	0.00E+00	2.62E-09	1 77E-08	0 00E+00	0 00E+00	0 00E+00	0 00€+00	0.00E+00	0.00E+00	8 17E-07	1 14E-06	2.39E-09	2.20E-06	
Non-Caranogenic risk - all ro					-														8 95E-02	
Non-Carcinogenic risk - all ro																			1.84E-04	
OTAL NON-CARCINOGENIC	HAZARD INDEX - ALL ROUTES	Sum HI	fraction	0	0	0	0	0	0	0	0	0 000758526	1.83498E-05	0	0	2.94857E-05	0 002658647	2,95385E-05	8.97E-02	

TABLE 7-6
CTE RISK CALCULATIONS FOR ON-SITE WORKER (MODERATE TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

								_						Che	micats of Pote	ntial Concern					
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Paramater	Symbol	Units	Non Contaminant- Specific Parameters	1,1,2,2-Tetrachlaroethane	1,1,2-Trichloroethane	1,1-Dichlaroethane	Tolal 1,2 Dichloroethene	1.2.4 Trichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3-Dichloroberzene	1.4-Dichlorobenzene	2.4.6-inchlorophenol	2.4-Dinitrotokvene	26-Dinitrotokuene	2-Chlorophenol	
	_														<u> </u>			·			
Groundwater	Alr	indoor air	Vapour intrusion - inhalation		Com	ug/m3		1.96E-04	3.13E-04	9.75E-02	6.14E-02		7.31E-04	5.35E-04	2.33E-01	2.28E-01	0.00E+00	0.00E+00	0.00E+00	3.93E-03	0.00E+0
				POE concentration	Com	mg/m3		1.96E-07	3.13E-07	9.75E-05	6.14E-05	2.96E-05	7.31E-07	5.35E-07	2.33E-04	2.28E-04	0.00E+00	0.00E+00	0.00E+00	3.93E-06	0 00E+
				Inhalation rate	IR	m3/hr	1.6														
				Exposure time	飪	h/d	10														
				Exposure frequency	<u> </u>	dΛy	219														
				Exposure duration	ED BW	y h-	6.6 70														
				Body weight	AT _c	k g d	25,550														
				Averaging time carcinogens	ATn _e	Q	2,409														
				Averaging time non-carcinogens	AIII6	٥	2,407														
				Average intake from inhalation carcinogens	l _a	mg/kg-d		2.5344E-09	4 04728E-09	1.26073E-06	7.9394E-07	3.82746E-07	9 45228E-09	6.91788E-09	3.01283E-06	2.94818E-06	0	0	0	5.08173E-08	
				Inhalation Cancer Slope Factor	CSF _e	kg-d/mg		2.03E-01	5 70E-02				9.10E-02	•		2.20E-02	1 09E-02	•	•	0.00.702.40	
				Risk	R	fraction		5.14E-10	2.31E-10				8.60E-10			6.49E-08	0.00E+00				
				Total carcinogenic risk for exposure route	₽ı	fraction															
				Average intake from Inhalation non-carcinogens	l _a	mg/kg-d		2.688E-08	4.29257E-08	1.33714E-05	8.42057E-06	4.05943E-06	1 002516-07	7,337146-08	3.195435-05	3 126865-05	0	n	0	5.38971E-07	
				Inhalation Reference Dose	RfD	mg/kg-d						1 14E-03	1.40E-03	1.14E-03		2.30E-01	-	•	•		
				Hazard Quatient	HQ	mg/kg-d							7.16082E-05			0.00013595					
				Total Hazard Index	HI	mg/kg-d															
			Carcinogenic risk - all routes									•			·	-					
			Caranogenic risk - ali routes TOTAL CARCINOGENIC RISK		Curren Dá	fraction		5 14E-10	231E-10	0 00E+00	0.005.00	0.005.00	0.405.10	0.005.00	0.005.00		0.005.00				
					Sum RI	HOCHOH		3 140-10	2315-10	U UUE+00	0.00E+00	0 00E+00	8 60E-10	0 00E+00	0 00E+00	6 49E-08	0 00E+00	0 00E+00	0.00E+00	0 00E+00	0.00 E+
			Non-Carcinogenic risk - all ra Non-Carcinogenic risk - all ra																		
				CHAZARD INDEX - ALL ROUTES	Sum HI	fraction		0	0	0		0 003560902	7 140925.05	4.43400E-05		0 00013595	0	^		0	
			IOIAL IVOITCARCEROGETAC	SINDAND INDEX - NE KOOID	30111111							0.00000702	, 10002E-03	0 40007E-05		0 00013373	U	<u></u>			

Notes. 1- ug/l = micrograms per Liter

2- ug/m3 = micrograms per cubic meter

3- h/d = hours per day 4- l/d = liters per day

5- d/y = days per year

6-y≖yecr

7- kg = kilogram 8- d = day

9- hr = hour

10- mg/kg-d = milligrams per kliogram per day

11- kg-d/mg = kliograms per day per miligram

12- m3/hr = cubic meter per hour 13- mg/m3 = miligrams per cubic meter

TABLE 7-6
CTE RISK CALCULATIONS FOR ON-SITE WORKER (MODERATE TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

															Chemical	of Potential C	oncern					
Exposure Route	Paramater	Symbol	Units	4,6-Dinitro-2-Methyl Phenol	Arector-1016	Aroctor-1221	Aroclor-1232	Aroctor-1242	Arockor-1248	Aroclor-1254	Aroclor-1260 (Filtered)	Benzene	Benzo(a)anthracene	Вепго(а)ругеле	Benzo(b)fluoranthene	Berzo(k)fluoranthene	bk(2-Chloroethyl) Ether	bis(2-Chlorolsopropyi) Elher	Bis (2-ethylhexyl phthalate)	Bromodichisromethane	Carbon Tetrachlaride	
	POE concentration POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens	Cosh Cosh IR ET ED BW AT _c	ug/m3 mg/m3 m3/hr h/d d/y y kg	0.00E+00 0.00E+00	4.05E-05 4.05E-08	0.00E+00 0.00E+00	0.00E+00 0.00E+00	2.59E-05 2.59E-08	0.00E+00 0.00E+00	5.925-05 5.925-08	3.26E-03 3 26E-06	3.106-01 3.106-04	0.00E+00 0.00E+00	0.00E+00 0.00E+00	7 06E-05 7.06E-08	0.00E+00 0.00E+00	3.04E-04 3.04E-07	0.00E+00 0.00E+00	0.00E+00 0.00E+00	4.20E-03 4.20E-06	2.52£-03 2.52£-06	
	Averaging time non-carcinogens Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	AĬn. U CSF. R R,	d mg/kg-d kg-d/mg fraction fraction	0	5.2369E-10 4.00E-01 2.09E-10	0 400E-01 0.00E+00	0 4.00E-01 0.00E+00	3.34903E-10 4 00E-01 1.34E-10	0 4 00E-01 0.00E+00	7.65492E-10 4.00E-01 3.06E-10	4.21.538E-08 4.00E-01 1.69E-08	2.73E-02	0 3.08E-01 0.00E+00	0 3.08E+00 0.00E+00	9.12901E-10 3.08E-01 2.81E-10	0 3.085-01 0.00E+00	3.93091E-09 1 16E+00 4.56E-09	0	0	5 430865-08	3.25851E-08 5 20E-02 1.69E-09	
	Average intake from Inhalation non-carcinogens Inhalation Reference Dose Hozard Quotient Total Hazard Index	l _e RfD _{esh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	5.55429E-09	0	0	3.552E-09	0	8 118865-09	4.47086E-07	4.25143E-05 8.57E-03 0.004960827	0	0	9.68229E-09	0	4.16914E-08	0	0	0.00000576	3.45 6E- 07	0.001315 1.70E-0 0.07736470
Carcinogenic risk - all routes (c Carcinogenic risk - all routes (c	undetected organics)		<u></u>		·							·-										
TOTAL CARCINOGENIC RISK - Non-Carcinogenic risk - all rou		Sum Rt	fraction	0 00E+00	2.09E-10	0 00E+00	0 00E+00	1.34E-10	0 00E+00	3 06E-10	1 69E-08	1 09E-07	0 00E+00	0 00E+00	2.81E-10	0 00E+00	4 56E-09	0 00E+00	0 00E+00	0 00E+00	1 69E-09	0 00E+0
Non-Carcinogenic risk - ali rou TOTAL NON-CARCINOGENIC	utes (undetected organics)	Sum HI	fraction	0	0	0	0	0	0	0	0	0 004960827	- 0	. 0	<u>-</u> 0	0		0	n	<u>-</u>		0 07736470

TABLE 7-6
CTE RISK CALCULATIONS FOR ON-SITE WORKER (MODERATE TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

												Cr	nemicals of Pote	ntical Concern	-					
Exposure Route	Paramater	Symbol	Units	Chlorodibromomethane	Chlaroform	Dibenzo(a,h)Anthracene	Dibenzofuran	Hexachloro-1,3-Butadlene	Hexachlorobenzene	Indeno(1,2,3-cd)Pyrene	2-methymaphithatene	Naphihalene	Nitrobenzene	Nitrosodi-n-propykamine	Pentachlorophenol	Tefrachlaroethene	Irichkroelhene	Vinyl Chloride	Total	% Confribution
															-					
Vapour intrusion - Inhalation	POE concentration	Con	ug/m3	1 49E-04	1.236-02	0.00E+00	5.62 E -06	2.63E-03	8.52E-04	0.00E+00	5.09E-04	4.74E-03	7.64E-05	0.00E+00	0.00E+00	3.01E-02	2.21E-01	6.16E-03		ı
	POE concentration	Con	mg/m3	1.49E-07	1.23E-05	0.00E+00	5.62E-09	2.63E-06	8.52E-07	0.00E+00	5.09E-07	4.74E-06	7.64E-08	0.00E+00	0.00E+00	301E-05	2.21E-04	6.16E-06		i
	Inhalation rate	IR .	m3/hr																	1
	Exposure fime	ET	h/d																	1
	Exposure frequency	£	d∕y																	1
	Exposure duration	ED.	y																	ı
	Body weight	BW	kg																	ı
	Averaging time carcinogens	AT _c	d																	ı
	Averaging time non-carcinogens	ATn _c	d																	I
	Average intake from Inhalation carcinogens	l _a	mg/kg-d	1 92666E-09	1.59047E-07	0	7.267E-11	3.40075E-08	1.10169E-08	0	6 58168E-09	6.129115-08	9.87899E-10	0	٥	3.89211E-07	2.85767E-06	7.96526E-08		I
	Inhalation Cancer Slope Factor	CSF _e	kg-d/mg		8 10E-02	3 08E-01		7 70E-02	1.61E+00	3 08E-01		****		•	•	2.10E+00				I
	Risk	R	fraction		1.29E-08	0.00E+00		2.62E-09	1.77E-08	0.00E+00						8.17E-07				ı
	Total carcinogenic risk for exposure route	R _t	fraction]	1.116-06	100%
	Average intake from Inhalation non-carcinogens	l _a	mg/kg-d	2.04343E-08	1.68686E-06	0	7.70743E-10	3.60686E-07	1.16846E-07	0	6.98057E-08	6.50057E-07	1.047776-08	0	0	0.000004128	3.03086E-05	8 448E-07		i
	Inhalation Reference Dose	RfD	mg/kg-d									8 57E-04	5.71E-04			1.40E-01	1 146-02			i
	Hazard Quotlent	HQ	mg/kg-d									0.000758526	1.83498E-05					2.95385E-05		1
	Total Hazard Index	н	mg/kg-d																8.97E-02	100%
0																			1 005 04	
Carcinogenic risk - all routes Carcinogenic risk - all routes																			1 08E-06 2.68E-08	
TOTAL CARCINOGENIC RISK		Sum Rt	fraction	0.00E+00	1 29E-08	0 00E+00	0.00E+00	2.62E-09	1 77E-08	0 00E+00	0.00E+00	0.00E+00	0 00E+00	0 00E+00	0 00E+00	8 17E-07	5 72E-08	2,39E-09	1 11E-06	
Non-Carcinogenic risk - all ro		VVIII KI			. 2,2 30						0000	U 0002-000		0 002.00	V 442.40	0172-07	J,20-00	2071-07	8 95E-02	
Non-Cardnogenic risk - all ra																			1.84E-04	
	HAZARD INDEX - ALL ROUTES	Sum HI	fraction	0	0	0	0	0	0	0	0	0 000758526	1.83498E-05	0	0	2.94857E-05	0.002658647	2.95385E-05	8.97E-02	

TABLE 7-7
CTE RISK CALCULATIONS FOR ON-SITE WORKER (LOW TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

							_			-				Che	emicals of Pote	ntial Concern					
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Paramater	Symbo	l Units	Non Contaminant- Specific Parameters	1,1,2,2-Tetrachlaroethane	1,1,2-Inchloroethane	1,1-Dichloroethane	Total 1,2 Dichloroethene	1,2,4 Trichlorobenzene	1,2-Dichloroefhane	1,2-Dichloropropane	1,3-Dichlorobenzene	1,4-Drchlaroberzene	24,6 Inchlorophenol	2.4-Dinitrotokuene	2.6-Dinitrotokuene	2-Chlorophenol	3,3-Dichlorobenzidine
								·													
Groundwater	Air	Indoor air	Vapour intrusion - inhalation	POE concentration	Com	ug/m3		1.96E-04	3.13E-04	9.75E-02	6.14E-02	2.96E-02	7.31E-04	5.35E-04	2.33E-01	2.28E-01	0.00E+00	0.00E+00	0.00E+00	3.93E-03	0.00E+00
				POE concentration	Can	mg/m3		1.966-07	3.13E-07	9.75E-05	6.14E-05	2.96E-05	7.31E-07	5.35E-07	2.33E-04	2.28E-04	0 00E+00	0.00E+00	0.00E+00	3.93E-06	0 00E+00
				Inhaiation rate	IR	m3/hr	1.6														
				Exposure time	ET	h/d	10														
				Exposure frequency	EF.	d/y	219														
				Exposure duration Body weight	ED BW	y ka	6.6 70														
				Averaging time carcinogens	AT _c	₹ .	25,550														
				Averaging time non-carcinogens	ATn.	d	2,409														
				And Carlo in the reason of ora	7	•	2,707														
				Average Intake from Inhalation carcinogens	L	mg/kg-d		2.5344E-09	4.04728E-09	1.26073E-06	7.9394E-07	3.82746E-07	9.45228E-09	6.91788E-09	3.01283E-06	2,94818E-06	0	0	O	5.08173E-08	0
				Inhalation Cancer Slope Factor	ČSF,	kg-d/mg		2.03E-01	5.70E-02				9 10E-02			2.20E-02	1 09E-02	_	_		-
				Risk	R	fraction		5.14E-10	2.31E-10				8.60E-10			6.49E-08	0.00E+00				
				Total cardinogenic risk for exposure route	R _t	fraction															
				Average intake from inhalation non-carcinogens	l _a	mg/kg-d		2.688E-08	4.29257E-08	1.33714E-05	8.42057E-06	4.05943E-06	1 002516-07	7.33714E-08	3.195436-05	3 12686E-05	0	0	0	5.38971E-07	0
				Inhalation Reference Dose	RfD _{int}	mg/kg-d						1 14E-03	1.40E-03	1 14E-03		2.30E-01					
				Hazard Quotient	HQ	mg/kg-d						0.003560902	7.16082E-05	6.43609E-05		0.00013595					
				Total Hazard Index	HI	mg/kg-d	·														
			Carcinogenic risk - all routes																		
			Carcinogenic risk - all routes																		
			TOTAL CARCINOGENIC RISK		Sum Rt	fraction	·	5 14E-10	2.31E-10	0.00E+00	0.00E+00	0.00E+00	8 60E-10	0.00E+00	0.00E+00	6 49E-08	0 00E+00	0 00E+00	0 00E+00	0.00E+00	0.00E+00
			Non-Carcinogenic risk - all ra																		
			Non-Caranogenia risk - ali ra	C HAZARD INDEX - ALL ROUTES	Curre 1.0	fraction				0		0.003560902	7.140005.05	4.42400E.05		0.00013595					
			IOIAT NON-CAKCINOGENIC	- HATAKO INDEX - ALL KOUTES	20m Hi	IICCION		0				UUUUU0007U2	/ 100025-00	0.430U7E-U3		0.00013393	0	. 0			

Notes:

1- ug/i = micrograms per Liter

2- ug/m3 = micrograms per cubic meter

3- h/d = hous per day

4- l/d = liters per day

5- d/y = days per year

5- a/y = days per 6- y = year 7- kg = kdlogram 8- d = day 9- hr = hour

10- mg/kg-d = milligrams per kilogram per day 11- kg-d/mg = kilograms per day per milligram 12- m3/hr ≈ cubic meter per hour

13- mg/m3 = miligrams per cubic meter

TABLE 7-7
CTE RISK CALCULATIONS FOR ON-SITE WORKER (LOW TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

															Chemicat	of Potential C	oncem		<u> </u>			
Exposure Route	Paramater	Symbo	al Units	4,6-Dinitro-2-Methy) Phenol	Aroclor-1016	Aroctor-1221	Aroctor-1232	Arockar-1242	Aroclor-1248	Aroctor-1254	Aroclor-1260 (Pitlered)	Benzene	Serzo(a)anthracene	Benzo(a)pyrene	Benzo(b)flucranthene	Benzo(k)flucranithene	bs(2-Chloroelhyl) Elher	bs(2-Chlorolsopropyl) Elher	Bis (2-eithythexyl phithalate)	Bromodichloromethane	Carbon Telrachlonde	
				0.005.00	4055.05	0.005.00	0.005.00	0.505.05														
Vapour Intrusion - inhalation		Con	ug/m3	0.00€+00	4.05E-05	0.00E+00	0.00E+00	2.595-05	0.00E+00	5.92E-05	3.26E-03	3.106-01	0.00E+00	0.00=+00	7.06E-05	0.00E+00	3.04E-04	0.00E+00	0.00E+00	4.20E-03	2.52E-03	
	POE concentration	Con	mg/m3	0.00€+00	4.05E-08	0.00E+00	0.00E+00	2.596-08	0.00E+00	5.92E-08	3.26E-06	3.10E-04	0.00E+00	0.00E+Q0	7.06E-08	0.00E+00	3.04E-07	0.00E+00	0.00E+00	4.20E-06	2.52E-06	9.596
	Inhalation rate	IR_	m3/hr																			
	Exposure time	EI.	h/d																			
	Exposure frequency	ED H	d/y																			
	Exposure duration	BW	y ka																			
	Body weight	AT _c	đ																			
	Averaging time carcinogens Averaging time non-carcinogens	ATn _e	d																			
	Average intake from inhalation carcinogens	L	mg/kg-d	0	5.2369E-10	n	0	3.34903E-10	n	7.65492E-10	4.21538E-08	4.00849E-06	0	0	9 12901E-10	0	3 93091E-09	o	٥	5.43086E-08	3.25851E-08	0.00012#
	Inhalation Cancer Slope Factor	ČSF.	kg-d/mg	•	4.00E-01	4 00E-01	4.00E-01	4.00E-01	4 00E-01	4.00E-01	4.00E-01	2.73E-02	3.08E-01	3.08E+00	3.08E-01	3.08E-01	1 16E+00	·	Ū	3×3000L-00	5.20E-02	
	Risk	R	fraction		2.09E-10	0.00E+00	0 00E+00	1.34E-10	0.00E+00	3.06E-10	1.69E-08	1.09E-07	0.00E+00	0.00E+00	2.81E-10	0.00E+00	4.56E-09				1.695-09	
	Total carcinogenic risk for exposure route	R,	traction			3.000					,		0.002			0.002.00	-11,000.07				1.0/2-0/	
	Average intake from inhalation non-carcinogens	l _o	mg/kg-d	0	5.55429E-09	0	0	3.552E-09	0	8 118865-09	4.47086E-07	4.25143E-05	0	0	9.68229E-09	0	4.16914E-08	0	0	0.000000576	3.456E-07	0.00131
	Inhalation Reference Dose	RfD _{inh}	mg/kg-d									8.57E-03										1 705
	Hazard Quotlent	HQ	mg/kg-d									0.004960827										0.0773647
	Total Hazard Index	HI	mg/kg-d					1,102														
Carcinogenic risk - all routes Carcinogenic risk - all routes																	···········					
TOTAL CARCINOGENIC RISK		Sum Rt	fraction	0 00€+00	2.09E-10	0.00E+00	0 00E+00	1.34E-10	0 00E+00	3 06E-10	1 69E-08	1 09E-07	0 00E+00	0 00 E+ 00	2.81E-10	0 00E+00	4 56E-09	0 00E+00	0 00E+00	0 00E+00	1 69E-09	0 00E+
Non-Carcinogenic risk - all ro Non-Carcinogenic risk - all ro																						
	CHAZARD INDEX - ALL ROUTES	Sum HI	fraction	0	0	0	0	0	0	0		0 004960827	0	0	0	0		Δ.				0 0773647

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TABLE 7-7
CTE RISK CALCULATIONS FOR ON-SITE WORKER (LOW TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

			_					·	-			Ch	emicals of Pote	ntial Concern						
Exposure Route	Paramater	Symbol	Units	Chlorodibromomethane	Chloroform	Dibenzo(a.h)Anttracene	Dibenzofuan	Hexachloro-1,3-Butadiene	Нехасністорепzепе	indeno(1,2,3-cd)Pyrene	2-melty/naphthalene	Naphihalene	Nitrobenzene	Nitrosodi-n-propylamine	Pentachkrophenol	Tetrachloroethene	Inchloroethene	Vinyl Chloride	Total	% Contribution
Non Introduction Introduction	POT serves tradion	C _{o-In}		1 49E-04	1.236-02	0.00E+00	5.62E-06	2.63E-03	8.52E-04	0 00E+00	5.096-04	4.745-03	7.64E-05	0.00E+00	0.00E+00	3.015-02	2.215-01	4145.00		
Vapour intrusion - inhalation			ug/m3	1.49E-07	1 235-05	0.00E+00	5.62E-09	2.63E-06	8.52E-07	0.00E+00	5.09E-07							6 16E-03		
	POE concentration Inhalation rate	C _{o-In}	mg/m3 m3/hr	1.495-07	1 200-00	ODOETOD	3.020-07	2.630-06	0.325-07	0.002-00	30750/	4 /45-06	7.64E-08	0 00E+00	0.00E+00	3.015-05	2.21E-04	6 16E-06		
	Exposure time	EI	h/d																	
	Exposure frequency	Ē.	q\																	
	Exposure duration	ĒD.	v ,																	
	Body weight	BW	, ka																	
	Averaging time carcinogens	AT _c	ď																i	
	Averaging time non-carcinogens	ATn _e	đ																	
	Average intake from inhalation carcinogens	l _a	mg/kg-d	1. 92666E-09	1.59047E-07	0	7.267E-11	3 40075E-08	1.10169E-08	o	6.58168E-09	6.12911E-08	9.87899E-10	0	0	3.89211E-07	2.85767E-06	7.96526E-08		
	Inhalation Cancer Slope Factor	CSF _o	kg-d/mg		8 10E-02	3.08E-01		7.706-02	1 61E+00	3 08E-01						2.10E+00	6.00E-03	3.00E-02		
	Risk	R	traction		1.295-08	0.00E+00		2.62E-09	1.77E-08	0.00E+00						8.17E-07	1 71E-08	2.39E-09	_	
	Total caranogenic risk for exposure route	R _i	fraction															Į.	1.078-06	100%
	Average intake from Inhalation non-carcinogens	l _a	mg/kg-d	2.04343E-08	1.68686E-06	0	7.70743E-10	3.60686E-07	1.16846E-07	0	6.98057E-08	6.50057E-07		0	0	0 000004128	3.030865-05	8.448E-07		
	Inhalation Reference Dase	RfD _{inth}	mg/kg-d									8.57E-04	5.71E-04			1.40E-01	1 14E-02	2.86E-02		
	Hazard Quotient	HQ	mg/kg-d									0.000758526	1.83498E-05			2,94857E-05	0 002658647	2.95385E-05		
	Total Hazard Index	H1	mg/kg-d											- · · <u>· · · · · · · · · · · · · · · · ·</u>				[8.97E-Q2	100%
Carcinogenic risk - all routes	(detected arganics)																		1 04E-06	
Caranogenic risk - all routes																			2 68E-08	
TOTAL CARCINOGENIC RISK		Sum Rt	fraction	0 00E+00	1 29E-08	0 00E+00	0 00E+00	2 626-09	1 77E-08	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	0 00E+00	8 17E-07	1 71E-08	2.39E-09	1 07E-06	
Non-Carcinogenic risk - all ra				·		-													8 95E-02	
Non-Carcinogenic risk - all ro	utes (undetected organics)																		1.84E-04	
TOTAL NON-CARCINOGENIC	HAZARD INDEX - ALL ROUTES	Sum HI	fraction	0	0	0	0	0	0	0	0	0 000758526	1.83498E-05	0	0	2.94857E-05	0 002658647	2.95385E-05	8.97E-02	

TABLE 7-8

RME RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (HIGH TCE SLOPE FACTOR)

MISSOURI ELECTRIC WORKS

													Che	emicals of Pote	ential Concern		····				
Exposure Source Medium Medium	Exposure Point	Exposure Route	Porameter	Symbol	Units	Non Contaminani- Specific Parameters	1,1,2.2-Tefrachloroethane	1,1,2-îrichloroeithane	1,1-Dichlaroethane	Total 1,2 Dichloroethene	1,2,4 Inchlorobenzene	1,2-Dichloroeithane	1,2-Dichloropropane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2.4.6 Inchlorophenol	2.4-Dinitrototuene	2.6-Dinthololuene	2-Chlorophenol	3.3-Dichlorobenzidine	4,6-Dinitro-2-Methyl Phenol
Groundwater Groundwater	Excavation It	_	POE concentration POE concentration Water ingestion rate Exposure threquency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT., ATn.,	ug/t mg/m3 Vd d/y y kg d	0.12 250 1 70 25,550 365	0.004371 0.004371	0 03861 0.03861	0.5766 0.5766	1.5 1.5	2 2		0.03627 0.03627	3.42 3.42	2.47 2.47	0.009114 0.009114	0.27729 0 27729	0.01256 0.01256	0.1674 0.1674	0.014043 0.014043	0.009021 0.009021
			Average intake from ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l, CSF。 R R,	mg/kg-d kg-d/mg fraction fraction		7.331845-11 2.006-01 1.475-11	6.47638E-10 5.70E-02 3.69E-11	9 671795-09	2.51607E-08	3.35477E-08	1.13827E-09 9 10E-02 1.04E-10	6.08387E-10 6.80E-02 4.14E-11	5.73665E-08	4.14314E-08 2.40E-02 9.94E-10	1.52877E-10 1 10E-02 1.68E-12	4 65122E-09 6.80E-01 3 16E-09	2.10679E-10 6.70E+00 1.41E-09	2.807945-09	2,35555E-10 4 50E-01 1,06E-10	1 5131 <i>7E</i> -10
			Average Intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	l₀ RfD _{mh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		5 13229E-09 6.00E-02 8.55382E-08	4.53346E-08 4 00E-03 1.13337E-05	6.77025E-07 1.00E-01 6.77025E-06	1.00E-02	2.34834E-06 1 00E-02 0 000234834	2.00E-02	1 106-03	3.00E-02	2.90025-06 3.006-02 9.667326-05	1.07014E-08 1.00E-04 0.000107014	2.00E-03	1.47476E-08 1.00E-03 1.47476E-05	1.96556E-07 5.00E-03 3.93112E-05	1.64888E-08	1.05922E-08 1.00E-04 0.000105922
		Dermal contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sidn surface area Body weight Averaging time Averaging time non-carcinogens	C _w tevent Doevent EV ED EF SA BW AT ATn _c	ug/l hr mg/cm2-event events/day y d/y cm2 kg d/y d	12 1 1 250 3,300 70 25,550 365	0.004371 4.10047E-10	0 03861 3.20469E-09	0.5766 4.85462 <u>E</u> -08	1.5 1.43777E-07	2 1.57314E-06	0.06786 3.58512E-09	0.03627 3 54061E-09	3.42 2.22447E-06	2.47 1.215886-06	0.009114 4.20667E-09	0.27729 1.22407E-08	0.D1256 0	0.1 <i>6</i> 74 1.7053E-08	0 014043 3.08616E-09	
			Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _e R R _i	mg/kg-d kg-d/mg fraction fraction		1.89147E-10 2.00E-01 3.78E-11	1.47826E-09 5.70E-02 8.43E-11	2.23934E-08	6.63213E-08	7.25658E-07	1.65375E-09 9.10E-02 1.50E-10	1.63321E-09 6.80E-02 1.11E-10	1.0261E-06	5.60864E-07 2.40E-02 1.35E-08	1.94045E-09 1.10E-02 2.13E-11	5.64639E-09 8.00E-01 4.52E-09	0 6.70E+00 0.00E+00	7.8662E-09	1.42359E-09 4.50E-01 6.41E-10	1.87971E-10
			Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{ric} RfD _{rih} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1.32403E-08 6.00E-02 2.20671E-07	1.03478E-07 4.00E-03 2.58696E-05	1.56754E-06 1.00E-01 1.56754E-05	1 006-02	5.07961E-05 1.00E-02 0.005079608	1 157625-07 2.005-02 5.788115-06	1.14325E-07 1 10E-03 0.000103932	3.00E-02	3.92604E-05 3.00E-02 0.001308682	1.00E-04	3.95247E-07 2.00E-03 0.000197624	1.00E-03	5.50634E-07 5.00E-03 0.000110127	9.9651E-08	1.3158E-08 1.00E-04 0.00013158
Carcinogenic risk - all routes (detection carcinogenic risk - all routes (undetection) CRICK - ALL ROMAN CARCINOGENIC RISK - ALL ROMAN Carcinogenic risk - all routes (under carcinogenic risk - all routes (under carcinogenic risk - all routes (undetection)	ected organics) OUTES etected organics)			Sum Rt	fraction	<u>-</u> -	5 25E-11	1 21E-10	0 00E+00	0.00E+00	0 00E+00	2.54E-10	1.52E-10	0 00E+00	1 45E-08	2.30E-11	7 68E-09	1.41E-09	0 000E+00	7 47E-10	0 00E+00
TOTAL NON-CARCINOGENIC HAZAR		\$		Sum HI	fraction		3.06209E-07	3 72032E-05	2.24456E-05	0.000640374	0 005314442	9 77206E-06	0.000142647	0.0025281	0 001405355	0.001465331	0 000360416	1 47476E-05	0 000149438	0	0 000237501

Notes: 1- ug/l = micrograms per Liter 2- ug/m3 = micrograms per cubic meter

3- h/d = hours per day

4- I/d = Iters per day

5-d/y = days per year

6-y≡year 7-kg = kliogram

8- d = day 9- hr = hour

10- mg/kg-d = milligrams per kllogram per day 11- kg-d/mg = kllograms per day per milligram 12- cm2 = square centimeter

13- m3/hr = cubic meter per hour

14- mg/m3 = milligrams per cubic meter

TABLE 7-8

RME RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (HIGH TCE SLOPE FACTOR)

MISSOURI ELECTRIC WORKS

																							CIRIC WORL
														Chemical	of Potential C	oncern							
Exposure Route	Parameter	Symbol	Units	Arockar-1016	Arockor-1221	Arockar-1232	Arockor-1242	Aroctor-1248	Arockor-1254	Aroclor-1260 (Fittered)	Вепzепе	Benzo(a)anthracene	Вегдо(а)ругале	Benzo(b)fluoranthene	Benzo(k)fluoranthene	bs(2-Chloroethyl) Ether	bs(2-Chlorosopropyl) Ether	Bis (2-eitrythexy/l phithatate)	Bromodichlaromethane	Carbon Teltachlonde	Chlorobenzene	Chloroditromomethane	
ncidental ingestion of groundwater	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time corcinogens Averaging time non-cardnogens	C., C., IR EF ED BW AT _c ATn _c	ug/l mg/m3 l/d d/y y kg d	0.0000985 0.0000985	0.00005713 0.00005713	0.00006895 0.00006895	0.0000394 0.0000394	0.00002561 0.00002561	0.00004334 0.00004334	0.001773 0.001779	0.562 0.562		0.00026004 0.00026004	0.00016038 0.00016038	0.0000924 0.0000924	1.404 1.404	0.20358 0.20358	0.04728 0 04728	0 585 0.585	0.003906 0.003906	507 507	0.04797 0.04797	3. 3.
	Average intake from ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l. CSF. R R ₁	mg/kg-d kg-d/mg traction traction	1.65222E-12 4.00E-01 6.61E-13	9.58289E-13 4.00E-01 3.83E-13	4.00E-01	6.60889E-13 4.00E-01 2.64E-13	4.29578E-13 4 00E-01 1.72E-13	7.26978E-13 4 00E-01 2.91E-13	4.00E-01	9.42689E-09 5.50E-02 5.18E-10	4.69231E-12 7.30E-01 3.43E-12	7 30E+00	2.69019E-12 7.30E-01 1.96E-12	1.5499E-12 7.30E-02 1.13E-13	2.35505E-08 1 10E+00 2.59E-08	3.414825-09	7 93067E-10 1.40E-02 1.11E-11	9.81269E-09 6.20E-02 6.08E-10	6.55186E-11 1.30E-01 8.52E-12	8.50433E-06	8.04641E-10 8.40E-02 6.76E-11	5.1026E
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	l _a RfD _{kth} HQ H#	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.15656E-10 7 00E-05 1.65222E-06	6.708025 -11	8.09589E-11	4.62622E-11	3.00705E-11	5.0888.5E-11 2.00E-05 2.5444.2E-06	2.0818E-09	6.59883E-07 4.00E-03 0.000164971	3.28462E-10	3.05331E-10	1,88313E-10	1.084935-10	1.64853E-06	2.39037E-07 4.00E-02 5.97593E-06	5.55147E-08 2.00E-02 2.77573E-06	6.86888E-07 2.00E-02 3.43444E-05	4.5863E-09 7 00E-04 6.55186E-06	0.000595303 2.00E-02 0.029765166	5.63249E-08 2 00E-02 2.81624E-06	1 00E
Dermal contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-caranogens	C _w tevent Doevent EV ED EF SA BW AT AIn _c	ug/I hr mg/cm2-even events/day y d/y cm2 kg d/y d	0.0000985	0.00005713 8.65051E-11	0.00006895 1.04403E-10	0.0000394 4.46448E-10	0.00002561 3.11296E-10	0.00004334 8.36258E-10	0.001 <i>773</i> 2.13652E-07	0.562 1.00564E-07	0.00027974 1.63214E-09	0 00025004 2.83061E-09	0.00016038 1.79014E-09	0.0000924 1.01597E-09	1.404 3.30985E-08	0.20358 1.2647E-07	0.04728 3.68309E-08	0.585 3.66002E-08	0.003906 8.16161E-10	507 0.000168459	0.04797 2.31554E-09	3.0 2.63463E
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _c CSF _o R R _i	mg/kg-d kg-d/mg traction traction	0 4.006-01 0.00E+00	3.99031E-11 4 00E-01 1.60E-11	4.81.589E-11 4.00E-01 1.93E-11	2.05938E-10 4.00E-01 8.24E-11	1.43595E-10 4 00E-01 5.74E-11	3.85749E-10 4.00E-01 1.54E-10	9.85536E-08 4.00E-01 3.94E-08	4.63881E-08 5.50E-02 2.55E-09		1.3057E-09 2.35E+00 3.07E-09	8.257575-10 2.306-02 1.906-11	4.68649E-10 7.30E-02 3.42E-11	1.52677E-08 1.10E+00 1.68E-08	5.83381E-08	1.69893E-08 1.40E-02 2.38E-10	1.68829E-08 6.20E-02 1.05E-09	3.76479E-10 1.30E-01 4.89E-11	7.77068E-05	1.06811E-09 8 40E-02 8.97E-11	1.21536
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotlent Total Hazard Index	DAD _{nc} RfD _{mh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	7.00E-05 0	2.793226-09	3.37113E-09	1.441565-08	1.00516E-08	2,70024E-08 2,00E-05 0,001350122	6.89875E-06	3.24716E-06 4.00E-03 0.000811791	5.270115-08	9.139936-08	5.7803E-08	3.28054E-08	1.068745-06	4.00E-02	1.18925E-06 3.80E-03 0.000312962	2.00E-02	7.00E-04	0.005439474 6.20E-03 0.877334519	7.47679E-08 2.00E-02 3.7384E-06	2.00E-
		Sum Rt	fraction	6 61E-13	1 63E-11	1 97E-11	8 26E-11	5.76E-11	1.55E-10	3 94E-08	3 07E-09	1 806-10	3 10E-09	2.10E-11	3.43E-11	4.27E-08	0 00E+00	2.49E-10	1 66E-09	5 75E-11	0 00€+00	1.57E-10	0 00 E+
) TES		Sum HI	fraction	1 65222E-06	0	0	0	0	0.001352667	0	0.000976762	0	0	0	0	0	0.000108068	0.000315737	9.34347F-05	4 41997F-05	0 907099685	A 55464F-06	0.0046107

TABLE 7-8
RME RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (HIGH TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

																	SOURI ELECTI	
										Ch	emicals of Pot	ential Concern	1					
Exposure Route	Parameter	Symbol	Units	Dibenzo(a.h)Anthracene	Dibenzofuran	Hexachloro-1,3-Butadiene	Hexachlorobenzene	Indeno(1,2,3-cd]Pyrene	2-methymaphithatene	Naphihalene	Niroberzene	Mirosodi-n-propykamine	Pentachlorophenal	Tetrachloroethene	Trichloroethene	Viryl Chloride	Total	
cidental ingestion	POE concentration	C _w	ug/l	0.0000858	0.00032505	0 00029353	0.0007548	0 0000924	0.01339	0.16182	0.017484	1,8954	0.00178088	0.26	574	0.08541		
of groundwater	POE concentration	C.,	mg/m3	0 0000858	0.00032505	0.00029353	0.0007548	0.0000924	0.01339	0.16182	0017484	1,8954	0.00178088	0.26	5.74	0.08541		1
_	Water ingestion rate	IR	I/d															l
	Exposure frequency	EF	ďγ															i
	Exposure duration	ED	y														i	i
	Body weight	B₩ AT _c	k o d															ı
	Averaging time carcinogens Averaging time non-carcinogens	ATn _e	d															
			_						*****									
	Average intake from Ingestion carcinogens	re-	mg/kg-d	1.43919E-12	5.45233E-12	4.92362E-12	1.26609E-11	1.5499E-12	2.24602E-10	2.71434E-09	2.93274E-10			4.3612E-09	9 628185-08	-		i
	Ingestion Cancer Slope Factor	CSF。 R	kg-d/mg	7.30E+00		7.80E-02	1 60E+00	7.30E-01				7 00E+00	1 206-01	5 40E-01	4 00E-01	7.20E-01		i
	Risk Tetal assalpagania feli for avenus pe poute	K R _t	fraction fraction	1.05E-11		3.84E-13	2.03E-11	1.13E-12				2.23E-07	3.58E-12	2.36E-09	3.85E-08	1,03E-09	2.99E-07	i
	Total carcinogenic risk for exposure route	~	II CEIROI													ŀ	Z.S-GE-UV	
	Average intake from ingestion non-carcinogens	l _o	mg/kg-d	1.00744E-10	3.81663E-10	3.44654E-10	8.86262E-10	1.08493E-10	1.57221E-08	1 90004E-07	2.05292E-08	2.22552E-06	2.09105E-09	3.05284E-07	6 73973E-06	1.00286E-07		
	Ingestion Reference Dose	RfD _{inh}	mg/kg-d		4 00E-03	2.00E-04	8 00E-04		4.00E-03	2.00E-02	5.00E-04		3.00E-02	1.006-02	3 00E-04	3.00E-03		
	Hozord Quotient	HQ	mg/kg-d		9.54159E-08	1.72327E-06	1.10783E-06		3.93053E-06	9.5002E-06	4.10583E-05		6.97018E-08	3.05284E-05	0.022465753	3.34286E-05		1
	Total Hazard Index	Н	mg/kg-d														\$41E-02	
Dermal contact	POE concentration	C. ,	ug/I	0.0000858	0.00032505	0 00029353	0.0007548	0.0000924	0.01339	0.16182	0.017484	1.8954	0 00178088	0.26	5.74	0.08541	}	
with groundwater	event duration	tevent	hr	1.732E-09	3.42608E-10	3.62066E-10	1 9/00/5 00	1 2000000 00	•	0 000000 00	1 01005 00	5.7445DF 00	1 1 40005 00	1.077015.07	0.440400.07	5 D705 (5 00	- 1	
	absorbed dose per event Event frequency	Daevent EV	mg/cm2-even events/day	1./325-09	3.420U0E~1U	3.020000-10	1.86906E-09	1.23553E-09	0	8.53355E-08	1.2109E-09	5.76652E-08	1.14039E-08	1.07791E-07	8 44062E-07	5.87356E-09		1
	Exposure duration	ED	v															ı
	Exposure frequency	EF	ďΛ															1
	Skin surface area	SA	cm2														1	i
	Body weight	BW	kg															ĺ
	Averaging time	TA	ďγ															l
	Averaging time non-cardnogens	ATn _c	d															
	Absorbed dose for carcinogens	DADc	mg/kg-d	7.98938E-10	1.58038E-10	1.67014E-10	8.62162E-10	5.69927E-10	0	3.93636E-08	5.58565E-10	2.65998E-08	5.2604E-09	4.97217E-08	3.89349E-07	2.70936E-09		ĺ
	Dermai Cancer Slope Factor	CSF _e	kg-d/mg	7.30E+00		7 80E-02	1.60E+00	2.306-01				1.80E+00	1 205-01	5 40E-0 1	6 00E-02	7 20E-01		1
	Risk	R	fraction	5.83E-09		1.306-11	1.38E-09	1.31E-10				4.79E-08	6.315-10	2.68E-08	2.34E-08	1.95E-09		1
	Total cardnogenic risk for exposure route	R,	fraction													;	1.918-07	ĺ
	Absorbed dose for non-cardinogens	DAD	mg/kg-d	5,59257E-08	1.10627E-08	1.1691E-08	6.03513E-08	3.98949E-08	-	2.75545E-06		1.86199E-06		3.48052E-06				ĺ
	Dermal Reference Dose	RfD _{Inh}	ma/ka-d		4.00E-03	2.00E-04	8.00E-04		4.00E-03	2.00E-02	5.00E-04		3.00E-02	1.00E-02	4.50E-05	3 00E-03	ł	1
	Hazard Quofient	HQ	mg/kg-d		2.76567E-06	5.84549E-05	7.54391E-05		0	0.000137773	7.81991E-05		1.22/43E-05	0 000348052	0.605654294	6.32184E-05	استرسور	i i
	Total Hazard Index	Н	mg/kg-d														1.50E+00	\vdash
																	4 63E-07	
		Sum Rt	fraction	5.84E-09	0 00E+00	1.34E-11	1 40E-09	1,326-10	0 00E+00	0 00E+00	0.00E+00	2 70E-07	6.35E-10	2.92E-08	6 19E-08	2,98E-09	2.39E-08 4.88E-07	<u> </u>
		- In In		- JJ-L V/		1,0070-11	1 *IUL=U7	1.022-10	U JULIU	0.000-000	- CALLETON	2/00-0/	0.00L-10	2721-06	0 175-08	2.701-07	1.55E+00	_
		_						_									4 13E-03	
		Sum HI	fraction	0	2.86109E-06	6 01782E-05	7 6547E-05	0	3 93053E-06	0 000147273	0 000119257	0	1 2344E-05	0 00037858	0 628120048	9 6647E-05	1.56E+00	

TABLE 7-9
RME RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (MODERATE TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

		 											Ch	emicals of Pote	ential Concern						
Exposure Source Medium 1	Exposure Point	Exposure Route	Parameter	Symbol	Units	Non Contaminant- Specific Parameters	1,1,2,2-Tefrachlaroethane	1,1,2-Trichlaroethane	1,1-Dichloroethane	Total 1,2 Dichloroethene	1,2,4 Trichlorobenzene	1,2-Dichloroeithane	1,2-Dichloropropane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2.4.6-Trichlorophenol	24-Diretrolosuene	2.6-Dinitrotokuene	2-Chlorophenol	3,3-Dichlorobenædine	
Groundwater Groundwater	Excavation	incidental ingestion of groundwater	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT _c ATn _c	ug/i mg/m3 i/d d/y y kg d	0.12 250 1 70 25,550 365	0.004371 0.004371	0 03861 0.03861	0.5766 0.5766	1.5 1.5	2 2		0.03627 0.03627	3.42 3.42	2.47 2.47	0.009114 0.009114	0.27729 0.27729	0.01256 0.01256	0.1674 0.1674	0 01 4043 0 01 4043	0.0090 0.0090
			Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R	mg/kg-d kg-d/mg fraction fraction		7.33184E-11 2.00E-01 1.47E-11	6.47638E-10 5.70E-02 3.69E-11	9.67179E-09	2.516075-08	3.35477E-08	1 13827E-09 9,10E-02 1.04E-10	6.80E-02	5.73665E-08	4.14314E-08 2.40E-02 9.94E-10	1.52877E-10 1 10E-02 1 68E-12	4 65122E-09 6.80E-01 3.16E-09	2.10679E-10 6.70E+00 1.41E-09	2.80794E-09	2.35555E-10 4.50E-01 1.06E-10	1.513175-
			Average intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	k RfD _m HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		5.13229E-09 6.00E-02 8.55382E-08	4.53346E-08 4 00E-03 1.13337E-05	6.77025E-07 1 00E-01 6.77025E-06	1.00E-02	2.34834E-06 1 00E-02 0.000234834	2.00E-02	1 105-03	4.01566E-06 3.00E-02 0.000133855		1.07014E-08 1 00E-04 0.000107014	2 00E-03	1.47476E-08 1.00E-03 1.47476E-05	1.96556E-07 5 00E-03 3.93112E-05	1.648885-08	1.05922E- 1.00E- 0.0001059
		Dermal contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Stan surface area Body weight Averaging time Averaging time Averaging time non-carcinogens	C., tevent Daevent EV ED EF SA BW AT ATn.	ug/I hr t mg/cm2-event events/day y d/y cm2 kg d/y d	12 1 250 3,300 70 25,550 345	0 004371 4.10047E-10	0.03861 3.20469E-09	0.5766 4.85462E-08	1.5 1.43777E-07	2 1.57314E-06	0.06786 3.58512E-09	0.03627 3.54061E-09	3.42 2.22447E-06	2.47 1.215885-06	0.009114 4.20667E-09	0.27729 1.22407E-08	0.01256 0	0.1674 1.7053E-08	0.014043 3.08616E-09	0.0090/ 4.07498E-
			Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _e R R _t	mg/kg-d kg-d/mg traction traction		1.89147E-10 2.00E-01 3.78E-11	1.47824E-09 5 70E-02 8.43E-11	2.23934E-08	6.63213E-08	7.256585-07	1.65375E-09 9.10E-02 1.50E-10	6.80E-02	1.0261E-06	5.60864E-07 2.40E-02 1.35E-08	1.94045E-09 1.10E-02 2.13E-11	5.64639E-09 8.00E-01 4.52E-09	0 6.70E+00 0.00E+00	7.86626-09	1.42359E-09 4.50E-01 6.41E-10	1.879716-
			Absorbed dose for non-cardinogens Dermal Reference Dose Hazard Quotlent Total Hazard Index	DAD _{nc} RfD _{mh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1.32403E-08 6.00E-02 2.20671E-07	1.03478E-07 4.00E-03 2.58696E-05	1.56754E-06 1.00E-01 1.56754E-05	1.00E-02	5.07961E-05 1.00E-02 0.005079608	2.00E-02	1 10E-03	7.18273E-05 3.00E-02 0.002394245	3 006-02	1.35832E-07 1.00E-04 0.001358318	3.95247E-07 2.00E-03 0.000197624	1 00E-03	5.50634E-07 5.00E-03 0.000110127	9.9651E-08	1,3158E- 1 006- 0.000131
Carcinogenic risk - all routes (detected Carcinogenic risk - all routes (undetect OTAL CARCINOGENIC RISK - ALL ROU Ion-Carcinogenic risk - all routes (det	cted organics) UTES tected organics)			Sum Rt	fraction		5 25E-11	1.21E-10	0 00E+00	0 00E+00	0 00E+00	2.54E-10	1 52E-10	0 00E+00	1 45E-08	2.30E-11	7 68E-09	1 41E-09	0 00E+00	7 47E-10	0 00E+
Non-Carcinogenic risk - all routes (und OTAL NON-CARCINOGENIC HAZARD				\$um Hi	fraction		3 06209E-07	3 72032E-05	2.24456E-05	0 000640374	0 005314442	9 77206E-06	0 000142647	0 0025281	0 001405355	0.001465331	0 000360416	1 47476E-05	0 000149438	0	0 00023750

Notes: 1- ug/l = micrograms per Liter 2- ug/m3 = micrograms per cubic meter

3-h/d = hours per day 4-1/d = liters per day

5- d/y = days per year

6-y≖yecar 7- kg ≠ kliogram

8- d = day 9- hr = hour

10-mg/kg-d = milligrams per kilogram per day

11- kg-d/mg = kilograms per day per milligram

12- cm2 = square centimeter 13- m3/hr = cubic meter per hour

14- mg/m3 = m@grams per cubic meter

TABLE 7-9
RME RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (MODERATE TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

		-												Chemical	of Potential C								
														CHOTHICU	or role ilidi c	Oncern							
éxposure Route	Parameter	Symbol	Units	Aroctor-1016	Arockor-1221	Aroclor-1232	Aroclor-1242	Aroctor-1248	Aroclor-1254	Arockor-1260 (Filtered)	Benzene	Senzo(a)an/tracene	Benzo(a)pyrane	Berzo(b)flvcranthene	Benzo(k)fluoranthene	bis(2-Chloroethyl) Ether	bis(2-Chlorotsopropyl) Ether	Bs (2-ethylhexyl phthalafe)	Bromodichloromelhane	Carbon Teltachl o ride	Сһстобетиеле	Chlorodibromomethane	
V E B A	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw IR EF ED BW ATu ATn	ug/1 mg/m3 Vd d/y y kg d	0.0000985 0.0000985	0.00005713 0.00005713	0.00006895 0.00006895	0.0000394 0.0000394	0.00002561 0.00002561	0.00004334 0.00004334	0 001773 0.001773	0.562 0.562	0.00027974 0.00027974			0 0000924 0.0000924	1.404 1.404	0.20358 0.20358	0.04728 0.04728	0.585 0.585	0.003906 0.003906	507 507		
ir R	Average intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction	1.65222E-12 4 00E-01 6.61E-13	9.58289E-13 4 00E-01 3.83E-13	1.15656E-12 4.00E-01 4.63E-13	6.60889E-13 4.00E-01 2.64E-13	4.29578E-13 4 00E-01 1.72E-13	7.26978E-13 4.00E-01 2.91E-13	2,974E-11 4,00E-01 1 19E-11	9.42689E-09 5 50E-02 5.18E-10	4.69231E-12 7.30E-01 3.43E-12	4.36187E-12 7.30E+00 3.18E-11	2.69019E-12 7.30E-01 1.96E-12	1.5499E-12 7.30E-02 1.13E-13	2.35505E-08 1 10E+00 2.59E-08	3.41482E-09	7.93067E-10 1.40E-02 1.11E-11	9.81269E-09 6 20E-02 6.08E-10	6.55186E-11 1.30E-01 8.52E-12		8.04641E-10 8.40E-02 6.76E-11	
tr H	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotlent Total Hazard Index	RfD _{mb} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.15656E-10 7.00E-05 1.65222E-06	6.70802E-11	8.095896-11	4.62622E-11	3.00705E-11	5.08885E-11 2.00E-05 2.54442E-06	2.0818E-09	6.59883E-07 4.00E-03 0.000164971	3.28462E-10	3.05331E-10	1.88313E-10	1.08493E-10	1 64853E-06	2.39037E-07 4.00E-02 5.97593E-06	5.55147E-08 2.00E-02 2.77573E-06	2.00E-02	7.00E-04	0.000595303 2.00E-02 0.029765166	2.00E-02	1
with groundwater e E E E S B A	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sidn surface area Body weight Averaging time Averaging time non-carcinogens	C _w tevent Daevent EV ED F SA BW AT ATn _e	ug/l hr mg/cm2-even events/day y d/y cm2 kg d/y d	0.0000985	0.00005713 8.65051E-11	0.00006895 1.04403E-10	0.0000394 4.46448E-10	0.00002561 3.11296E-10	0.00004334 8.36258E-10	0.001773 2.13652E-07	0.562 1.00564E-07	0.00027974 1.63214E-09		***************************************	0.0000924 1.01597E-09	1.404 3.30985E-08	0.20358 1.2647E-07	0.04728 3.68309E-08	0.585 3.66002E-08	0.003906 8.16161E-10	507 0.000168459		2.634
,A C R	Absorbed dase for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _c CSF _c R R _t	mg/kg-d kg-d/mg fraction fraction	0 4.00E-01 0.00E+00	3.99031E-11 4.00E-01 1.60E-11	4.81589E-11 4.00E-01 1.93E-11	2.05938E-10 4.00E-01 8.24E-11	1.43595E-10 4.00E-01 5.74E-11	3.85749E-10 4.00E-01 1.54E-10	9.85536E-08 4.00E-01 3.94E-08	4.63881E-08 5.50E-02 2.55E-09	7.52873E-10 2.35E-01 1.77E-10	1.3057E-09 2.35E+00 3.07E-09	8.25757E-10 2.30E-02 1.90E-11	4.68649E-10 7.30E-02 3.42E-11	1.52677E-08 1 10E+00 1.68E-08	5.83381E-08	1,69893E-08 1,40E-02 2,38E-10	1.68829E-08 6.20E-02 1.05E-09	3.76479E-10 1.30E-01 4.89E-11	7.77068E-05	1.06811E-09 8 40E-02 8.97E-11	
1 H	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{ne} RfD _{nh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	7.00E-05 0	2.79322E-09	3.37113E-09	1.44156E-08	1.00516E-08	2.70024E-08 2.00E-05 0.001350122	6.89875E-06	3.24716E-06 4 00E-03 0.000811791	5.270116-08	9,139935-08	5.7803E-08	3 28054E-08	1.068745-06	4.08367E-06 4 00E-02 0.000102092	1.18925E-06 3.80E-03 0.000312962	1.18181E-06 2 00E-02 5.90903E-05	7.00E-04	0.005439474 6.20E-03 0.877334519	2 00E-02	2
		Sum Rt	fraction	6.61E-13	1 63E-11	1 975-11	8.26E-11	5 76E-11	1 55E-10	3 94E-08	3.07E-09	1.80E-10	3.10E-09	2.106-11	3 43E-11	4 27E-08	0 00E+00	2.49E-10	1 66E-09	5 75E-11	0 00E+00	1.57E-10	0(
		Sum HI	fraction	1 65222E-06	0	0	0	0	0 001352667	0	0 000976762	0	0	0		0	0.000108068	0.000315737	9.34347E-05	4.41997F-05	0.907099685	6.55464F-06	0.004

TABLE 7-9
RME RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (MODERATE TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

										Ch	emicals of Pote	ential Concern	·				T	$\overline{}$
						_												
opposure Route	Parameter	Symbol	Units	Dibenzo(a,h)Anihracene	Dibenzofuran	Hexachloro-1,3-Butadiene	Hexachlorobenzene	indeno(1,2,3-cd)Pyrene	2-methymaphthalene	Naphthalene	Nitrobenzene	Nitrosodi-n-propylamine	Pentachtarophenol	Tefrachloraethene	Trichloroethene	Viryl Chloride	Total	
Idental Inspetion	POE concentration			0.0000858	0 00032505	0 00029353	0.0007548	0.0000924	0.01339	0.16182	0.017484	1,8954	0.00178088	0.26	574	0.08541		
formation	POE concentration	C.	mg/m3	0.0000858	0.00032505	0.00029353	0.0007548	0 0000924	0.01339	0 16182	0.017484	1.8954	0.00178088	0.26	5.74	0.08541	ł	l
a groot cawaila	Water ingestion rate	₽R.	Vd.	0.000000	0.0000000	• • • • • • • • • • • • • • • • • • • •			0.00.00	•		1.070	0.000.70000	-		0.00041	l l	l
	Exposure frequency	EF	ďγ															ı
	Exposure duration	ED .	~/,														l l	Į.
	Body weight	BW	ka															
	Averaging time carcinogens	AT _c	ď															1
	Averaging time carcinogers Averaging time non-carcinogens	ATn _c	q															
		1	mg/kg-d	1.43919E-12	5.45233E-12	4 023435-13	1.26609E-11	1.5499E-12	2.246025.10	2714345.00	2.932745-10	3.17931E-08	2.987226-11	4.3612E-09	9.62818E-08	1.43265E-09		
	Average intake from Ingestion carcinogens	l, CSF.		7.30E+00	J.40203C*12	7.80E-02	1 60E+00	7.30E-01	2240UZL-1U	£/ 1404£*07	£102/4C-10	7.00E+00	1.206-01	5.40E-01	2.00E-02	7.206-01	1	ı
	Ingestion Cancer Slope Factor	-	kg-d/mg			3.84E-13	2.035-11	1.13E-12							1.93E-09		l	1
	Risk	R	fraction	1.05E-11		3.040-13	ZAUGE-11	1.136-12				2.23E-07	3.58E-12	2.36E-09	1.936-09	1.03E-09	- 20 /16	
	Total carcinogenic risk for exposure route	R,	fraction														2,418-07	1
	Average intake from ingestion non-carcinogens	l _o	mg/kg-d	1.00744E-10		3.44654E-10	8.86262E-10	1.08493E-10	1.57221E-08	1 90004E-07	2.052925-08	2.22552E-06		3.05284E-07	6.73973E-06	1 00286E-07		
	Ingestion Reference Dose	RfD _{inh}	mg/kg-d		4 00E-03	2.00E-04	8 00£-04		4 00E-03	2,00E-02	5.00E-04		3.00E-02	1.00E-02	3.00E-04	3 00E-03		1
	Hazard Quotlent	HQ	mg/kg-d		9.54159E-08	1,72327E-06	1.10783E-06		3.93053E-06	9.5002E-06	4.10583E-05		6.97018E-08	3.05284E-05	0.022465753	3.34286E-05		J
	Total Hazard Index	HI	mg/kg-d														1418-02	▙
Dermal contact	POE concentration	C _w	ug/l	0.0000858	0 00032505	0.00029353	0.0007548	0.0000924	0.01339	0.16182	0.017484	1,8954	0.00178088	0.26	5.74	0.08541		
with groundwater	event duration	tevent	hr															ı
-	absorbed dose per event	Daevent	mg/cm2-even	1 .732E-0 9	3.42608E-10	3.62066E-10	1.86906E-09	1.23553E-09	0	8.53355E-08	1.2109E-09	5.76652E-08	1.14039E-08	1.07791E-07	8.44062E-07	5.87356E-09		ı
	Event frequency	EV	events/day															ı
	Exposure duration	ED	у														ŀ	1
	Exposure frequency	₽	d/y														ŀ	
	Skin surface area	SA	cm2															1
	Body weight	BW	kg														i	1
	Averaging time	ΑT	d/y															ı
	Averaging time non-carcinogens	ATn _c	d															
	Absorbed dose for carcinogens	DAD	mg/kg-d	7.98938E-10	1.58038E-10	1.67014E-10	8.62162E-10	5.69927E-10	0	3.93636E-08	5.58565E-10	2.65998E-08	5.2604E-09	4 97217E-08	3.89349E-07	2.70936E-09		
	Dermal Cancer Slope Factor	CSF.	kg-d/mg	7.30E+00		7.806-02	1.60E+00	2.30E-01				1.80E+00	1 20E-01	5 40E-01	3.00E-03	7.20E-01	ŀ	1
	Risk	R	fraction	5.83E-09		1,30E-11	1.38E-09	1.31E-10				4.79E-08	6.31E-10	2.68E-08	1.17E-09	1.95E-09	Į.	l
	Total carcinogenic risk for exposure route	R _t	fraction														1.69E-07	1
	Absorbed dose for non-carcinogens	DAD	mg/kg-d	5.59257E-08	1,106275-08	1.1691E-08	6.03513E-08	3.98949E-08	٥	2.75545E-06	3.909965-08	1.861995-04	3.68228E-07	3.480525-06	2.72544E-05	1.89655E-07		
	Dermal Reference Dose	RfD _{inh}	mg/kg-d	J.0720. 2 0D	4 00E-03	2.00E-04	8.00E-04		4.00E-03	2.00E-02	5.00E-04		3.00E-02	1 00E-02	4 50E-05	3.00E-03		ı
	Hazard Quotient	HQ	mg/kg-d		2.76567E-06					0 000137773					0.605654294			1
	Hazara Quotient Total Hazara Index	HG HI	mg/kg-d		210011-00	JU-01/L-00			U	5 000 107 17 5	, 2017/12/03		, <u></u>			3.021040-03	13506+00	1
	- mr are a reported to 1 100 cores	<u></u>					·····		· 									1
																	4.04E-07 2.39E-08	
		Sum Rt	fraction	5,84E-09	0 00E+00	1.34E-11	1 40E-09	1 32E-10	0 00E+00	0 00E+00	0 00E+00	2 70E-07	6.35E-10	2 92E-08	3 09E-09	2 98E-09	4.30E-07	_
	· · · · · · · · · · · · · · · · · · ·															=	1.55E+00	
					2.86109E-06		7 6547E-05			0.000147273			1.2344E-05		0.628120048		4 13E-03	<u> </u>

TABLE 7-10

RME RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (LOW TCE SLOPE FACTOR)

Missouri Bechic Works, Cape Girardeau

				••									Ch	emicals of Pote	entral Concern		_					
Expos Source Medium Mediu		Exposure Route	Parameter	Symbol	Units _	Non Contammant- Specific Parameters	1,1,2,2-Tefrachloroethane	1,1,2-Trichloroethane	1,1-Dkchkroeihane	Total 1,2 Dichloroethene	1,2,4 Trichlorobenzene	1,2-Dichloroethane	1.2-Dichloropropane	.3-Dichlorobenzene	I,4-Dichlorobenzana	2.4.6-Trichlorophenol	2.4-Dinitrotoluene	2,6-Dinitrotolvene	2-Chlorophenol	3.3-Dichlorobenzidine	4,6-Dinitro-2-Meltryl Phenol	
Groundwater Groundk	water Excavation	incidental ingestion of groundwater	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT., ATn.,	ug/l mg/m3 Vd d/y y kg d	0.12 250 1 70 25,550 365	0.004371 0.004371	0.03861 0.03861	0.5766 0.5766	1.5 1.5	2 2	0.06786 0.06786	0.03627 0.03627	3.42 3.42	2.47 2.47	0.009114 0.009114	0.27729 0.27729	0.01256 0.01256	0.1674 0.1674	0.014043 0.014043		
			Average intake from ingestion caranogens Ingestion Cancer Slope Factor Risk Total caralnogenic risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction		7.33184E-11 2.00E-01 1.47E-11	6.47638E-10 5.70E-02 3.69E-11	9.67179E-09	2.51607E-08	3.35477E-08	1.13827E-09 9.10E-02 1.04E-10	6.08387E-10 6.80E-02 4.14E-11	5.73665E-08	4.14314E-08 2.40E-02 9.94E-10	1.52877E-10 1.10E-02 1.68E-12	4.65122E-09 6.80E-01 3.16E-09	2.10679E-10 6.70E+00 1.41E-09	2.80794E-09	2.35555E-10 4.50E-01 1,06E-10	1.51317E-10	1.65222E-1 4.00E-0 6.61E-1
			Average Intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	ե RfD _{mh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		5.13229E-09 6.00E-02 8.55382E-08	4.53346E-08 4.00E-03 1.13337E-05	6.77025E-07 1.00E-01 6.77025E-06	1,006-02	2.34834E-06 1.00E-02 0.000234834	7.96791E-08 2.00E-02 3.98395E-06	4.25871E-08 1 10E-03 3.87155E-05		3.00E-02	1.00E-04	3.25585E-07 2.00E-03 0.000162793	1.47476E-08 1.00E-03 1.47476E-05	1.96556E-07 5.00E-03 3.93112E-05	1.64888E-08	1.05922E-08 1.00E-04 0.000105922	7.00E-0
		Dermal contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-caranogers	C _w tevent Daevent EV ED EF SA BW AT ATn _c	ug/i hr i mg/cm2-event events/day y d/y cm2 kg d/y d	12 1 1 250 3.300 70 25,550 365	0.004371 4.10047E-10	0.03861 3.20469E-09	0.5766 4.85462E-08	1.5 1.43777E-07	2 1.57314E-06	0.06786 3.58512E-09	0.03627 3.54061E-09	3 42 2.22447E-06	2.47 1.21588E-06	0.009114 4.20667E-09	0.27729 1.22407E-08	0.01256 0	0.1674 1.7053E-08	0.014043 3.08614E-09	0.009021 4.074985-10	
			Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _o R R _i	mg/kg-d kg-d/mg fraction fraction		1.89147E-10 2.00E-01 3.78E-11	1.47826E-09 5.70E-02 8.43E-11	2.239345-08	6.63213E-08	7.25658E-07	1.65375E-09 9 10E-02 1.50E-10	1.63321E-09 6.80E-02 1.11E-10	1.0261E- 0 6	5.60864E-07 2.40E-02 1.35E-08	1.94045E-09 1 10E-02 2.13E-11	5.64639E-09 8.00E-01 4.52E-09	0 6.70E+00 0.00E+00		1.42359E-09 4.50E-01 6.41E-10	1.879715-10	4,00E-0 0.00E+0
			Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{ne} RfD _{nh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1.32403E-08 6.00E-02 2.20671E-07	1.03478E-07 4.00E-03 2.58696E-05	1,005-01	4 64249E-06 1,00E-02 0,000464249	1.00E-02	2.00E-02	1.10E-03	7.18273E-05 3.00E-02 0.002394245	3.00E-02	1.00E-04	3.95247E-07 2.00E-03 0.000197624	0 1,006-03 0		9.9651E-08	1.3158E-08 1.00E-04 0.00013158	7.00E-0
Carcinogenic risk - all routes Carcinogenic risk - all routes FÖTAL CARCINOGENIC RISK Non-Carcinogenic risk - all ro Non-Carcinogenic risk - all ro TOTAL NON-CARCINOGENIC	s (undetected organics) - ALL ROUTES outes (detected organic outes (undetected organic	cs) nics)			fraction		5.25€-11	1 215-10					1.52E-10	0.00E+00 0.0025281		2.30E-11	7 685-09	1 415-09	0.00€+00	7 47E-10	0 000€+000	

Notes

1-ug/1 = micrograms per Liter

2-ug/m3 = micrograms per cubic meter

3- h/d = hous per day

4- l/d = lites per day

5- dly = days per year

A y a ware

6- y = year 7- kg = kilogram 8- d = day 9-hr = hour

10-mg/kg-d = milligrams per kilogram per day 11-kg-d/mg = kilograms per day per milligram 12-cm2 = square centimeter

13- m3/hr = cubic meter per hour 14- mg/m3 = miliigrams per cubic meter

TABLE 7-10
RME RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (LOW TCE SLOPE FACTOR)
Missouri Bectic Works, Cape Girardeau

													Chemical	of Potential C	oncern									
Exposure Route	Paramet e r	Symbol	Unds	Aroctor-1221	Arockor-1232	Arockor-1242	Aroctor-1248	Arockor-1254	Aroclor-1260 (Filtered)	Велгепе	Benzo(a)anttracene	Benzo(a)pyrene	Benzo(b)fuoranthene	Benzo(k)fluoranthene	bs(2-Chloroethy!) Ether	bs(2-Chlorolsopropy/) Eiher	Bs (2-ethythexyl phthalate)	Bromodichloromethane	Carbon Tefrachlaride	Chlorobenzene	Chlorodibromomelhane	Chloroform	 Dibenzo[a,h]Anthracene	
ncidental ingestion of groundwater	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw Cw IR EF ED BW AT _c ATn _c	ug/l mg/m3 l/d d/y y kg d	0.00005713 0.00005713	0.00006895 0.00006895	0.0000394 0.0000394	0.00002561 0.00002561	0.00004334 0.00004334	0.001773 0.001773	0.562 0.562	0.00027974 0.00027974	0.00026004 0.00026004	0 00014038 0.00014038	0.0000924 0.0000924	1.404 1.404	0.20358 0.20358	0.04728 0.04728	0.585 0.585	0.003906 0.003906	507 507	0.04797 0.04797	3.042 3.042		
	Average intake from ingestion carcinogens Ingestion Cancer Stope Factor Risk Total carcinogenic risk for exposure route	l, CSF, R R _i	mg/kg-d kg-d/mg fraction fraction	9.58289E-13 4 00E-01 3.83E-13	1.15656E-12 4.00E-01 4.63E-13	6.60889E-13 4.00E-01 2.64E-13	4,29578E-13 4,00E-01 1 72E-13	7.26978E-13 4.00E-01 2.91E-13	2.9745-11 4.006-01 1.196-11	9.42689E-09 5.50E-02 5.18E-10	4 69231E-12 7.30E-01 3.43E-12	4.36187E-12 7.30E+00 3.18E-11	2.69019E-12 7.30E-01 1.96E-12	1.5499E-12 7.30E-02 1.13E-13	2.35505E-08 1.10E+00 2.59E-08	3.41482E-09	7.93067E-10 1.40E-02 1.11E-11	9.81269E-09 6.20E-02 6.08E-10	6.55186E-11 1.30E-01 8.52E-12	8.50433E-06	8.04641E-10 8.40E-02 6.76E-11	5.1026E-08	1.43919E-12 7.30E+00 1.05E-11	
	Average intake from ingestion non-carcinogens Ingestion Reference Dose Hazard Quohent Total Hazard Index	l _a RfD _{inh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	6.708025-11	8.095896-11	4 62622E-11	3.00705E-11	5.08885E-11 2.00E-05 2.54442E-06	2.0818E-09	6.59883E-07 4.00E-03 0.000164971	3.28462E-10	3.05331E-10	1.883135-10	1.084936-10	1.64853E-06	2.39037E-07 4.00E-02 5.97593E-06	5.55147E-08 2.00E-02 2.77573E-06	6.86888E-07 2.00E-02 3.43444E-05	7 00E-04	0.000595303 2.00E-02 0.029765166	5.63249E-08 2.00E-02 2.81624E-06	3.57182E-06 1.00E-02 0.000357182	1.00744E-10	3.816638 4.006 9.541598
Dermal contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-caranogens	C., tevent Daevent EV ED SF SA BW AT ATnc	ug/I hr mg/cm2-even events/day y d/y cm2 kg d/y d		0.00006895 1.044036-10	0.0000394 4.46448E-10	•	0.00004334 8.36258E-10	0.001773 2.13652E-07	0.562 1.00564E-07		0.00026004 2.83061E-09	0 00016038 1.79014E-09	0.000924 1.01597E-09	1.404 3.30985E-08	0.20358 1.2647E-07	0 04728 3.68309E-08	0.585 3.66002E-08	0.003906 8.16161E-10	507 0.000168459	0.04797 2.31554E-09	3.042 2.63463E-07	0.0000658 1.732E-09	
	Absorbed dose for caranogens Dermal Cancer Slope Factor Risk Total caranogenic risk for exposure route	DAD _c CSF _e R R _i	mg/kg-d kg-d/mg fraction fraction	3.99031E-11 4.00E-01 1.60E-11	4,81589E-11 4,00E-01 1,93E-11	2.05938E-10 4.00E-01 8.24E-11	1.43595E-10 4 00E-01 5.74E-11	3.85749E-10 4.00E-01 1.54E-10	9.85536E-08 4.00E-01 3.94E-08	4.63881E-08 5.50E-02 2.55E-09	7.52873E-10 2.35E-01 1.77E-10	1.3057E-09 2.35E+00 3.07E-09	8.25757E-10 2.30E-02 1.90E-11	4.68649E-10 7.30E-02 3.42E-11	1.52677E-08 1 10E+00 1.68E-08	5.83381E-08	1.69893E-08 1 40E-02 2.38E-10	1.68829E-08 6.20E-02 1.05E-09	3.76479E-10 1.30E-01 4.89E-11	7.770 68 E-05	1.06811E-09 8.40E-02 8.97E-11	1.21535-07	7.98938E-10 7.30E+00 5.83E-09	
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{nc} RfD _{nth} HQ H!	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.793226-09	3.37113E-09	1.44156E-08	1,00516E-08	2.70024E-08 2.00E-05 0.001350122	6.89875E-06	3.24716E-06 4 00E-03 0.000811791	5.27011E-08	9.139973E-08	5.7803E-08	3.280545-08	1.06874E-06	4.08367E-06 4.00E-02 0.000102092	1.18925E-06 3.80E-03 0.000312962	1.18181E-06 2.00E-02 5.90903E-05	7.00E-04	0.005439474 6.20E-03 0.877334519	2.00E-02	8.50713E-06 2.00E-03 0.004253567	5.59257E-08	1 10627E 4 00E 2.76567E
		Sum Rt	fraction	1 63E-11	1 97E-11	8.265-11	5.76E-11	1.55€-10	3.945-06	3.07E-09	1.806-10	3 106-09	2.10E-11	3 43E-11	4.27E-08	0.00E+00	2.49E-10	1 66E-09	5.75€ -11	0 00E+00	1.57E-10	0 00E+00	5.84E-09	0 000€

TABLE 7-10
RME RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (LOW TCE SLOPE FACTOR)
Missouri Beckle Works, Cape Girardeau

								Ch	emicals of Pot	entral Concern						
Exposure Route	Parameter	Symbol	Units	Hexachioro-1,3-Butadiene	Hexachkrobenzene	Indeno[1,2,3-cd]Pyrene	2-methymaphthalene	Naphthalene	Nitrobenzene	NitrosodFn-propykamine	Pentachlorophenol	Tetrachloroefhene	Trichloroeithene	Vinyl Chloride	Tolca	Section of the sectio
Incidental ingestion	POE concentration	C,,	ug/l	0.00029353	0.0007548	0.0000924	0.01339	0.16182	0.017484	1.8954	0.00178088	0.26	5.74	0.08541		
of groundwater	POE concentration	C.,	mg/m3	0.00029353	0.0007548	0.0000924	0.01339	0.16182	0.017484	1.8954	0.00178088	0.26	5.74	0.08541	i	
	Water ingestion rate	IR.	Vd.													
	Exposure frequency	EF ED	d/y													
	Exposure duration Body weight	BW	y ka													
	Averaging time carcinogens	AT _c	ď												ŀ	
	Averaging time non-carcinogens	ATn _o	d												1	
	Average intake from ingestion carcinogens	l _o	mg/kg-d	4.92362E-12	1.26609E-11	1,5499E-12	2.24602E-10	2.71434E-09	2.93274E-10	3.17931E-08	2.98722E-11	4.3612E-09	9 62818E-08	1.43265E-09		
	Ingestion Cancer Slope Factor	CSF.	kg-d/mg	7.806-02	1 60E+00	7.306-01				7.00E+00	1.206-01	5.40E-01	6.00E-03	7.206-01		
	Risk	R	fraction	3.84E-13	2.036-11	1.13E-12				2.23E-07	3.58E-12	2.36E-09	5.78E-10	1.03E-09		
	Total carcinogenic risk for exposure route	R,	fraction											L	2.606-07	619
	Average intake from Ingestion non-carcinogens	l _e	mg/kg-d	3.44654E-10		1.08493E-10		1.90004E-07	2.05292E-08	2.22552E-06		3.05284E-07			1	
	Ingestion Reference Dose	RfDinh	mg/kg-d	2.00E-04	8.00E-04		4.00E-03	2.00E-02	5 00E-04		3.00E-02	1.00E-02		3.00E-03		
	Hazard Quotient	HQ	mg/kg-d	1.72327E-06	1 10783E-06		3 93053E-06	9.5002E-06	4 10583E-05		6.97018E-08	3.05284E-05	0.022465753	3.34286E-05		~~
	Total Hazard Index	HI	mg/kg-d									·			5.416-02	39
Dermal contact	POE concentration	C.	ug/l	0.00029353	0.0007548	0.0000924	0.01339	0.16182	0.017484	1,8954	0.00178088	0.26	5.74	0.08541	ŀ	
with groundwater	event duration	tevent	hr	3.62066E-10	1.040045.00	1 005535 00	•	0 500 555 00	1 01005 00	5 7//FOT 00	1 1 4000 - 40	1 022015 07	0.440405.05	F 0 770 F / F 000	1	
	absorbed dose per event Event frequency	Daevent EV	mg/cm2-even events/day	3.020000:-10	1.86906E-09	1,235535-09	0	8.53355E-08	1.2109E-09	5.76652E-08	1.14039E-08	1.07791E-07	8.44062E-07	5.87356E-09		
	Exposure duration	ED	у												Į.	
	Exposure frequency	Œ	d/y													
	Skin surface area	SA	cm2													
	Body weight	BW	kg												i i	
	Averaging time	AT ATn _o	d/γ d												1	
	Averaging time non-carcinogens	7111 ₀	ū												1	
	Absorbed dose for carcinogens	DAD_c	mg/kg-d	1.670145-10		5.69927E-10	0	3 93636E-08	5.58565E-10	2.65998E-08	5.2604E-09	4 97217E-08	3.89349E-07	2.70936E-09		
	Dermal Cancer Slope Factor	CSF.	kg-d/mg	7.806-02	1.60E+00	2.306-01				1,80E+00	1.20E-01	5.40E-01	9.00E-04	7.20E-01		
	Risk	R	fraction	1.305-11	1.385-09	1.31E-10				4.79E-08	6.31E-10	2.68E-08	3.50E-10	1.95E-09		_
	Total carcinogenic risk for exposure route	R _t	fraction												1.665-07	399
	Absorbed dose for non-carcinogens	DAD _{ne}	mg/kg-d	1.1691E-08	6 03513E-08	3.98949E-08	_	2.75545E-06		1.86199E-06		3.48052E-06		1.89655E-07	1	
	Dermal Reference Dose	RfD _{inh}	mg/kg-d	2.00E-04	8.005-04		4,00E-03	2 005-02	5.00E-04		3.00E-02	1.00E-02		3.00E-03		
	Hazard Quotient Total Hazard Index	HQ Hi	mg/kg-d mg/kg-d	3-54347E-U0	7 54391E-05			0.000137773	7.81991E-US		1.22743E-05	UJUU348052	0.605654294	6.32184E-05	1.502+00	979
															4.02E-07	
:		Sum Rt	fraction	134E-11	1 40E-09	1,326-10	0 00E+00	0 00E+00	0 00€+00	2.70E-07	6.35E-10	2 925-08	9.28E-10	2 985-09	2.39E-08 4.27E-07	
		Jonnal		104211	1 706-07	1222-10	O COLYCO	V U.L700	0.002-00	2.700-07	0.330-10	2725-06	7.200-10	£ 70E-07	1 55E+00	
)															4 13E-03	
3		Sum HI	fraction	6 01782E-05	7 6547E-05	0	3 93053E-06	0 000147273	0 0001 19257	0	1 2344E-05	0 00037858	0 628120048	9 6647E-05	1.56E+00	

TABLE 7-11 CTE RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (HIGH TCE SLOPE FACTOR)
ANSSOURI ELECTRIC WORKS

													Chemicals	of Potential C	oncem		-				
Exposure Source Medium Medium	Exposure Point	Exposure Route	Paraméter	Symbol	Units	Non Contaminant- Specific Parameters	1,1,2,2-Tetrachloroethane	1,1,2-Trichlaroethane	1,1-Dichlaroethane	Total 1,2 Dichloroethene	1,2.4 Trichtorobenzene	1,2-Dichloroethane	1.2-Dichloropropane	1.3-Dichloroberizene	1,4-Dichlorobenzene	24.6-Trichlorophenol	2.4-Dinitrotoluene	2.6-Dinitrotoluene	2-Chlorophenol	3,3-Dichlorobenzidine	A Dintro 2 Method Pheno
Groundwater Groundwater	Excavation	incidental Ingestion of groundwater	POE concentration POE concentration Water Ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT _c AIn _c	ug/I mg/m3 I/d d/y y kg d	0.04 219 1 70 25,550 365	0.004371 0.004371	0.03861 0.03861	0.5766 0.5766	2.1 2.5	2 2	0.06786 0.06786	0 03427 0.03427	3.42 3 42	2.47 2.47	0 009114 0.009114	0.27729 0 27729	0.01256 0.01256	0 1674 0.1674	0.014043 0.014043	
			Average Intake from ingestion carcinogens Ingestion Cancer Stope Factor Risk Total carcinogenic risk for exposure route	l _a CSF _a R R _t	mg/kg-d kg-d/mg fraction fraction		2.1409E-11 2.00E-01 4.28E-12	1.8911E-10 5 70E-02 1.08E-11	2.824165-09	7 34694E-09	9.79592E-09	3.32376E-10 9 10E-02 3.02E-11	1.77649E-10 6.80E-02 1.21E-11	1.67515-08	1.2098E-08 2.40E-02 2.90E-10	4.464E-11 1 10E-02 4.91E-13	1.35816E-09 6.80E-01 9.24E-10	6.15184E-11 6.70E+00 4.12E-10	8.199185-10	6.8782E-11 4.50E-01 3.10E-11	4.41845E-11
	<u> </u>		Average intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	L RPD _{int} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1.49863E-09 6 00E-02 2.49771E-08	1.32377E-08 4 00E-03 3.30943E-06	1 97691E-07 1.00E-01 1.97691E-06	5 14286E-07 1.00E-02 5.14286E-05	6.85714E-07 1.00E-02 6.85714E-05	2.32663E-08 2.00E-02 1.16331E-06	1.24354E-08 1.10E-03 1.13049E-05	1.17257E-06 3.00E-02 3.90857E-05	3 00E-02	3 1248E-09 1.00E-04 0.000031248	9.50709E-08 2 00E-03 4.75354E-05	1 006-03	5.73943E-08 5.00E-03 1.14789E-05	4.81474E-09	3.09291E-09 1.00E-04 3.09291E-05
		Dermal contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	C _w tevent Dosevent EV ED EF SA BW AT ATn _c	ug/I hr mg/cm2-event events/day y d/y cm2 kg d/y d	1 1 219 3,300 70 25,550 365	0.004371 1.75629E-10	0.03861 1.27153E-09	0.5766 1.8216E-08	1.5 5.38343E-08	2 7.8367E-07	0.06786 1.34258E-09	0.03627 1.35765E-09	3.42 9.77486E-07	2.47 5.22286E-07	0.009114 2.08078E-09	0.27729 5.3639E-09	0.01256 0	0.1674 6.71769E-09	0.014043 1.66318E-09	
			Absorbed dose for carcinogens Dermai Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _e R R _t	mg/kg-d kg-d/mg fraction fraction		7.09685E-11 2.00E-01 1.42E-11	5.138E-10 5.70E-02 2.93E-11	7.360745-09	2.17535E-08	3.16667E-07	5 42512E-10 9 10E-02 4.94E-11	5 486E-10 6.80E-02 3.73E-11	3 94984E-07	2.11046E-07 2.40E-02 5.07E-09		2.16745E-09 8.00E-01 1.73E-09	0 6 70E+00 0.00E+00	2.7145E-09	6.7206E-10 4.50E-01 3.02E-10	7.60336E-11
			Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{ne} RfD _{inh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4.96779E-09 6.00E-02 8.27966E-08	3.5966E-08 4 00E-03 8.9915E-06	5.152526-07 1.006-01 5.152526-06	1.00E-02	2.21667E-05 1 00E-02 0.002216668	2.00E-02	1 10E-03	2.76489E-05 3.00E-02 0.00092163	3.00E-02	5 88564E-08 1 00E-04 0.000588564	1.517226-07 2.00E-03 7.58608E-05	0 1.00E-03 0	1.9001 <i>5</i> E-07 5 00E-03 3.8003E-05	4.704426-08	5.32235E-09 1.00E-04 5.32235E-05
Caranogenic risk - all routes (detecte Carainogenic risk - all routes (undetect TOTAL CARCINOGENIC RISK - ALL ROI Non-Carainogenic risk - all routes (det	cted organics) UTES			Sum Rt	fraction		1. 85 E-11	4.01E-11	0.00E+00	0 00E+00	0.00E+00	7 96E-11	4 94E-11	0 00E+00	5.36E-09	9 74E-12	2.66E-09		0 00E+00	3 33E-10	0 00E+00
Non-Carcinogenic risk - all routes (und TOTAL NON-CARCINOGENIC HAZARE	detected organics)	ES		Sum H	fraction		1 07774E-07	1.23009E-05	7 12943E-06	0 000203703	0 002285239	3 06211E-06	4 62159E-05	0 000960715	0 00052067	0 000619812	0 000123396		4 94818E-05	0	8 41527E-05

Notes:
1- ug/n = micrograms per Liller
2- ug/m3 = micrograms per cubic meter 3- h/d = hours per day

4- I/d = liters per day

5- d/y = days per year

6-y≃yoar

7- kg = kBogram 8-d≖dory

9- hr = hour

10- mg/kg-d = milligrams per kilogram per day 11- kg-d/mg = kilograms per day per milligram

12- cm2 = square centimeter

13- m3/hr = cubic meter per hour

14- mg/m3 ≈ miligrams per cubic meter

TABLE 7-11
CTE RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (HIGH TCE SLOPE FACTOR)
AUSSOURI ELECTRIC WORKS

																						WESSOON ETE	CIRC WOR
													Chemica	is of Potential C	oncern								
Exposure Route	Parameter	Symbol	l Units	Arockar-1016	Aroclor-1221	Arockor-1232	Arocior-1242	Arockar-1248	Aroctor-1254	Arockor-1260 (Fittered)	Веплете	8erzo(a)anihracene	вегго(а) ругеле	Benzo(b)fluoranthene	Berzo(k)fluoranihene	bs(2-Chloroelfryl) Ether	bs(2-Chloroteopropy)) Elher	Bs (2-ethythexyl phthalate)	Bromodichloromethane	Carbon Teltrachlande	Сикторендене	Chlarodibromomelhane	
adental ingestion of groundwater	POE concentration POE concentration Water Ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw Cw IR EF ED BW ATc AInc	ug/l mg/m3 l/d d/y y kg d		0.00005713 0.00005713		0.0000394 0.0000394	0.00002561 0.00002561	0.00004334 0.00004334	0 001773 0.001773	0.562 0.562		0 00026004 0.00026004	0.00016038 0.00016038	0 0000924 0.0000924	1.404 1.404	0.20358 0.20358	0.04728 0.04728	0.585 0.585	0.003906 0.003906	507 507		
	Average intake from ingestion caranogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l, CSF, R R,	mg/kg-d kg-d/mg traction fraction	4.006-01	2.79825-13 4.005-01 1.125-13	3.377145-13 4.008-01 1.355-13	1 9298E-13 4 00E-01 7.72E-14	1.25437E-13 4.00E-01 5.02E-14	2.12278E-13 4.00E-01 8.49E-14	8 68408E-12 4.00E-01 3.47E-12	2.75265E-09 5 50E-02 1.51E-10	1.37016E-12 7.30E-01 1.00E-12	1.273676-12 7.30 E+ 00 9.306-12	7.85535E-13 7.30E-01 5.73E-13	4.52571E-13 7.30E-02 3.30E-14		9.97127E-10	2.31.576E-10 1.40E-02 3.24E-12	2.86531E-09 6.20E-02 1.78E-10	1,306-01		2.34955E-10 8 40E-02 1 97E-11	
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quohent Total Hazard Index	l _e RfD _{mh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	7.00E-05	1.95874E-11	2.3645-11	1.350865-11	8.78057E-12	1.48594E-11 2.00E-05 7.42971E-07	6.07886E-10	1.92686E-07 4 00E-03 4.81714E-05	9.59109E-11	8 91566E-11	5.49874E-11	3.1686-11	4.81371E-07	6.97989E-08 4.00E-02 1.74497E-06	1.62103E-08 2.00E-02 8.10514E-07	2.00571E-07 2.00E-02 1.00286E-05	7 00E-04		-	1.0
Dermal contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	C _w tevent Daevent EV ED EF SA BW AT ATn	ug/I hr t mg/cm2-even events/day y d/y cm2 kg d/y d		0.00005713 4.883525-11		0.0000394 2.57757E-10	0.00002561 1.79727E-10	0.00004334 4.82814E-10	0.001773 1.23352E-07	0.562 3.69367E-08	0.00027974 1.03553E-09		0.00016038 1.03288E-09	0.0000924 5.86572E-10	1.404 1.3297 <i>5</i> E-08	0.20358 5.92563E-08	0.04728 2.12643E-08	0.585 1.54561E-08		507 6.58374E-05		1.0199
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for expasure route	DAD _e CSF _e R R _t	mg/kg-d kg-d/mg traction fraction	4.00E-01	1.97334E-11 4 00E-01 7.89E-12	2.38162E-11 4.00E-01 9.53E-12	1.04155E-10 4.00E-01 4.17E-11	7.26243E-11 4 00E-01 2.90E-11	1.95096E-10 4.00E-01 7.80E-11	4 98444E-08 4 00E-01 1.99E-08	1.49255E-08 5.50E-02 8.21E-10	4.18437E-10 2.35E-01 9.83E-11	6 66875E-10 2.35E+00 1.57E-09	4.17367E-10 2.30E-02 9.60E-12	2.37023E-10 7.30E-02 1.73E-11	5.37329E-09 1.10E+00 5.91E-09	2.39444E-08	8.59251E-09 1.40E-02 1.20E-10	6.24553E-09 6.20E-02 3.87E-10	1.30E-01	2.66037E-05	4.44919E-10 8.40E-02 3.74E-11	4.1213
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{nc} RfD _{inh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	7 006-05	1.38134E-09	1.66713E-09	7.290836-09	5.0837E-09	1.36567E-08 2.00E-05 0.000682836	3 48911E-06	1.04478E-06 4.00E-03 0.000261195	2.92906E-08	4 66812E-08	2.92157E-08	1.65916E-08	3.7613E-07	1.67611E-06 4.00E-02 4.19027E-05	6.01476E-07 3.80E-03 0.000158283	4.37187E-07 2.00E-02 2.18594E-05	7.00E-04	0 001862259 6 20E-03 0.300364356	2.00E-02	2.0
		Sum Rt	fraction		801E-12	9 66E-12	4 17E-1	291E-11	7.81E-11	1 99E-08	9 72E-10	9 93E-11	1 585-09	1 02E-11	1 73E-11	1 35E-08	0 00E+00	1.24E-10	5 65E-10	205E-11	0 00E+00	571E-11	00
		Sum HI	traction		0	0	0	0	0.000683579	0	0 000309367	0	0	0	0	0	4 36476E-05	0 000159094	3.18879E-05	1 57781E-05	0.309055784	2.37956E-06	0 00154
												· · · · · · ·											

TABLE 7-11
CTE RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (HIGH TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

										Chemical	of Potential C	oncern					
Exposure Route	Parameter	Symbol	Units	Dibenzo(a,h)Anithracene	Dibenzofuran	Hexachkno-1,3-Butadiene	Hexachlorobenzene	Indeno(1,23-cd)Pyrene	2-methytnaphthalene	Naphthalene	Mirobenzene	Mitrosodi-n-propykamine	Pentachkrophenol	Tetrachloroethene	Trichloroethene	Vinyi Chloride	
ncidental Ingestion of groundwater	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C. C. IR EF ED BW AT _c ATn _c	ug/l mg/m3 l/d d/y y kg d d	0.0000858 0.0000858	0.00032505 0.00032505	0.00029353 0.00029353	0.0007548 0.0007548	0.0000924 0.0000924		0.16182 0.16182	0.017484 0.017484	1.8954 1.8954	0.00178088 0.00178088	0.26 0.26	5.74 5.74	0.08541 0.08541	
	Average Intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l, CSF。 R R,	mg/kg-d kg-d/mg fraction fraction	4.20245E-13 7.30E+00 3.07E-12	1.59208E-12	1.4377E-12 7.80E-02 1.12E-13	3.69698E-12 1 60E+00 5.92E-12	4.52571E-13 7.30E-01 3.30E-13		7. 92588E-1 0	8.56359E-11	9.28359E-09 7.00E+00 6.50E-08	8.72268E-12 1.20E-01 1.05E-12	1.27347E-09 5.40E-01 6.88E-10	4 00E-01	4 18335E-10 7.20E-01 3.01E-10	
	Average Intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	I _e RfD _{iri} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	294171E-11	1.11446E-10 4.00E-03 2.78614E-08	1.00639E-10 2.00E-04 5.03194E-07	2.58789E-10 8.00E-04 3.23486E-07	3.1686-11	4.006-03	5.54811E-08 2.00E-02 2.77406E-06	5.99451E-09 5.00E-04 1.1989E-05	6.49851E-07	6.10587E-10 3.00E-02 2.03529E-08	1.00E-02	0.000001968 3.00E-04 0.00656	2.92834E-08 3.00E-03 9.76114E-06	
Dermai contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sidn surface area Body weight Averaging time Averaging time non-carcinogens	C.,, tevent Doevent EV ED EF SA BW AT ATn _e	ug/I hr mg/cm2-even events/day y d/y cm2 kg d/y d	0.0000858 8.45671E-10	0.00032505 1.71575E-10	0.00029353 2.07871E-10	0.0007548 1.03006E-09	0.0000924 6.201345-10		0.16182 3.51617E-08	0.017484 4.70403E-10	1.8954 2.26317E-08	0.00178088 6.30557E-09	0.26 4.8138E-08	5.74 3.35764E-07	0.08541 2.11254E-09	
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _e R R ₄	mg/kg-d kg-d/mg fraction fraction	3.41725-10 7.305+00 2.495-09	6.93303E-11	8.39967E-11 7.80E-02 6.55E-12	4.16228E-10 1 60E+00 6.66E-10	2.50585E-10 2.30E-01 5.76E-11		1.420825-08	1.900815-10	9 14505E-09 1,80E+00 1,65E-08	2.54797E-09 1.20E-01 3.06E-10	1.94517E-08 5 40E-01 1.05E-08	1.35676E-07 6.00E-02 8 14E-09	8 53641E-10 7.20E-01 6.15E-10	
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{rec} RFD _{ren} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.39204E-08	4.85312E-09 4 00E-03 1.21328E-06	5.87977E-09 2.00E-04 2.93989E-05	8 00E-04	1.75409E-08	4.00E-03	9,94575E-07 2,00E-02 4 97287E-05	1.33057E-08 5.00E-04 2.66113E-05	6.40154E-07	1.78358E-07 3 00E-02 5.94525E-06	1.36162E-06 1.00E-02 0.000136162	9 49732E-06 4.50E-05 0.211051526	5.97548E-08 3 00E-03 1 99183E-05	
		Sum Rt	fraction	2.50E-09	0.00E+00	6 66E-12	6 72E-10	5.806-11	-	0 00E+00	0 00E+00	8 14E-08	3.07E-10	1 12E-08	1 94E-08	9 16E-10	9.5 1 &
		Sum HI	fraction		1 241145-06	2.000015.05	2 (74245.05			E OFFOODE OF	3.86004E-05		5 96561E-06	0.000145074	0.017/1150/	00/70/5 05	1.7 5.3

TABLE 7-12
CTE RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (MODERATE TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

												Chemicals	of Potential Co	oncern						
Exposure ource Medium Medium Exposure Point	Exposure Route	Parameter	Symbol	Units	Non Contaminani- Specific Parameters	1,1,2,2-Tefrachlaroethane	1,1,2-Trichloroethane	1.1-Dichloroethane	Total 1,2 Dichloroethene	1,2,4 Trichloroberizene	1,2-Dichlaroethane	1,2-Dichloropropane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	24.6-Trichbrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene	2-Chlorophenol	3.3-Dichlorobenzidine	
Groundwater Excavation b	Incidental ingestion of groundwater	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carchogens	C. C., IR EF ED BW AT., AIn,	ug/l mg/m3 l/d d/y y kg d	0.04 219 1 70 25,550 365	0.004371 0.004371	0.03861 0.03861	0.5766 0.5766	1.5 1.5	2 2	0.06786 0.06786	0.03627 0.03627	3.42 3.42	2.47 2.47	0.009114 0.009114	0.27729 0.27729	0.01256 0.01256	0.1674 0.1674	0.014043 0.014043	
		Average Intake from Ingestion carcinogens Ingestion Cancer Stope Factor Risk Total carcinogenic risk for exposure route	L CSF R R	mg/kg-d kg-d/mg traction fraction		2.1409E-11 2.00E-01 4.28E-12	1.8911E-10 5.70E-02 1.08E-11	2.824165-09	7.34 69 45-09	9. 79592<u>5</u>-09	3.32376E-10 9.10E-02 3.02E-11	1.77649E-10 6.80E-02 1.21E-11	1.67515-08	1.20985-08 2.405-02 2.906-10	4.464E-11 1 10E-02 4.91E-13	1.35816E-09 6.80E-01 9.24E-10	6.15184E-11 6.70E+00 4.12E-10	8.199185-10	6.87826-11 4.506-01 3.106-11	
		Average intake from ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	l _o RfD _{mh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1.49863E-09 6.00E-02 2.49771E-08	1.32377E-08 4.00E-03 3.30943E-06	1 006-01	1 00E-02	6.85714E-07 1 00E-02 6.85714E-05	2,32663E-08 2,00E-02 1,16331E-06	1.243546-08 1.10E-03 1.130496-05	1.17257E-06 3 00E-02 3.90857E-05	3 00E-02	1.00E-04	9,50709E-08 2 00E-03 4,75354E-05	4.30629E-09 1 00E-03 4.30629E-06	5,73943E-08 5,00E-03 1,14789E-05	4,81,4746-09	3.09291 1 00 3.09291
	Dermal contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	C _w tevent Doevent EV ED EF SA BW AT ATn _e	ug/l hr tmg/cm2-event events/day y d/y cm2 kg d/y d	1 1 219 3,300 70 25,550 365	0.004371 1.75629E-10	0.03861 1.27153E-09	0.5766 1.8216E-08	1.5 5.38343E-06	2 7.8367E-Q7	0.06786 1.342586-09	0.03627 1.357656-09	3.42 9.77486E-07	2.47 5.22286E-07	0.009114 2.08078E-09	0.27729 5.3639E-09	0.01256 0	0.1674 6.717696-09	0.014043 1.66318E-09	
		Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _e R R _t	mg/kg-d kg-d/mg fraction fraction		7.096856-11 2.006-01 1.425-11	5.1385-10 5.705-02 2.935-11	7.340745-09	2.175355-08	3.166675-07	5.425126-10 9.106-02 4.946-11	5.4865-10 6.805-02 3.735-11	3.949845-07	2.11046E-07 2.40E-02 5.07E-09	8.408065-10 1 10E-02 9.255-12	8.00E-01	6 70E+00 0.00E+00	2.71455-09	6.7206E-10 4.50E-01 3.02E-10	
		Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{rec} RfD _{reft} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4.96779E-09 6.00E-02 8.27966E-08	3.59665-08 4 00E-03 8.99155-06	1.00E-01	1.00E-02	2.21667E-05 1.00E-02 0.002216668	2.00E-02	3.8402E-08 1.10E-03 3.49109E-05	3 00E-02	1,47732E-05 3,00E-02 0,000492441	1.00E-04	1.517226-07 2.00E-03 7.58608E-05	0 1.00E-03 0	1,90015E-07 5.00E-03 3,8003E-05	4,704425-08	5.32235E 1.00E 5.32235E
arcinogenic risk - all routes (detected organics) arcinogenic risk - all routes (undetected organics) DTAL CARCINOGENIC RISK - ALL ROUTES	···		Sum Rt	fraction	<u>.</u>	1.855-11	401E-11	0 00E+00	0 00E+00	0 00E+00	7 96E-11	4 94E-11	0.00E+00	5.36E-09	9 74E-12	2.66E-09		0 00E+00	3.33E-10	0 00E-
on-Carcinogenic risk - all routes (defected arganics) on-Carcinogenic risk - all routes (undetected arganics)			John Ki			1202911	701211	0000.00	0000.00		7,702-11	477611	- U.MW	J.JCL-07	7746-12	2.001-07			3.335-10	

Notes:
1- ug/l = micrograms per Liter
2- ug/m3 = micrograms per cubic meter

3- h/d = hours per day

4- I/d = liters per day 5- d/y = days per year

6- y = year 7- kg = kilogram

8-d=day 9-hr=hour

10- mg/kg-d = milligrams per kilogram per day

11-kg-d/mg = kllograms per day per milligram

12- cm2 = square centimeter

13- m3/hr = cubic meter per hour

14- mg/m3 = milligrams per cubic meter

TABLE 7-12
CTE RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (MODERATE TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

					· · · · · · · · · · · · · · · · · · ·								Chemica	s of Potential C	Concern								
Exposure Route	Parameter	Symbol	Units	Arocka-1016	Arockor-1221	Arocbr-1232	Aroctor-1242	Aroctor-1248	Aroclor-1254	Aroclor-1260 (Filtered)	Benzene	Benzo(a)anthracene	висо(а)ругеле	Benzo(b)fluoranthene	Berzo(k)flucranithene	bs(2-Chloroelftyf) Efher	bs(2-Chiprosopropy)] Elher	Bis (2-eithyfhesyl phithakate)	Bromodichkromethane	Carbon Tetrachlaride	Chkrobergene	Chkrodibromomethane	
ncidental ingestion of groundwater	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C. C. IR EF ED BW AT _c ATn _c	ug/I mg/m3 Vd d/y y kg d		0.00005713 0.00005713		0.0000394 0.0000394	0.00002561 0.00002561	0.00004334 0.00004334	0 001773 0.001773	0 562 0.562	0.00027974 0.00027974		0.00016038 0.00016038	0.0000924 0.0000924	1.404 1.404	0.20358 0.20358	0.04728 0.04728	0.585 0.585	0 003906 0.003906	507 507	0.04797 0.04797	3.6 3.6
	Average intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	i _e CSF _e R R _i	mg/kg-d kg-d/mg fraction fraction	4.00E-01	2.79826-13 4.005-01 1.125-13	3.37714E-13 4.00E-01 1.35E-13	1 92986-13 4 005-01 7,72E-14	1.25437E-13 4.00E-01 5.02E-14	2.12278E-13 400E-01 8.49E-14	4 00E-01	2.75265E-09 5.50E-02 1 51E-10	1.37016E-12 7.30E-01 1.00E-12	1.27367E-12 7.30E+00 9.30E-12	7.85535E-13 7.30E-01 5.73E-13	4.52571E-13 7.30E-02 3.30E-14	1 10E+00		2.31.5765-10 1.405-02 3.24E 12	2,86531E-09 6,20E-02 1 78E-10	1 91314E-11 1.30E-01 2.49E-12		2.34955E-10 8.40E-02 1 97E-11	
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	K RfD _{te} s HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	7 006-05	1 95874 E-11	2.364 E-11	1.350866-11	8.78057E-12	1.485946-11 2.00E-05 7.42971E-07	6.07886E-10	1.92686E-07 4.00E-03 4.81714E-05	9.59109E-11	8.91566E-11	5.49874E-11	3 168E-11	4.81371E-07	6 97989E-08 4,00E-02 1,74497E-06	1 62103E-08 2,00E-02 8.1C514E-07	2.00571E-07 2.00E-02 1.00286E-05	7 00E-04	0.000173829 2.00E-02 0.008691429	1.64469E-08 2.00E-02 8.22343E-07	1 00 E
Dermal contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-caranogens	C _w tevent Dosevent EV ED EF SA BW AT ATn _e	ug/I hr mg/cm2-even events/day y d/y cm2 kg d/y d		0.00005713 4.883526-11	0.00006895 5.8939E-11	0.000394 2.57757E-10	0.00002561 1.79727E-10	0.00004334 4.82814E-10	0.001 <i>77</i> 3 1.23352E-07	0.562 3.69367E-08	0.00027974 1.03553E-09	0.00026004 1.65035E-09	0.00016038 1.033288E-09	0.0000924 &84572E-10	1.404 1.3297.5E-08		0.04728 2.126436-08	0.585 1.54561F-08	0.003906 3.43123E-10	507 6.58374E-05	0 04797 1.1010&E-09	
	Absorbed dose for carcinogens Dermal Cancer Siope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _e R R _t	mg/kg-d kg-d/mg fraction fraction	4.00E-01	1 97334E-1 4 00E-01 7.89E-12	2.38162E-11 4.00E-01 9.53E-12	1.04155E-10 4.00E-01 4.17E-11	7.26243E-11 4 00E-01 2.90E-11	1 950966-10 4.006-01 7.806-11	4 96444E-08 4.00E-01 1 99E-08	1.49255E-08 5.50E-02 8.21E-10	4.18437E-10 2.35E-01 9.83E-11	6.46875E-10 2.35E+00 1.57E-09	4.17367E-10 2.30E-02 9.60E-12	2.37023E-10 7.30E-02 1.73E-11	5.37329E-09 1.10E+00 5.91E-09		8.59251E-09 1.40E-02 1.20E-10	6.24553E-09 6.20E-02 3.87E-10	1.3865E-10 1.30E-01 1.80E-11	2.660376-05	4,44919E-10 8 40E-02 3,74E-11	
	Absorbed dose for non-carcinogens Dermai Reference Dose Hazard Quotlent Total Hazard Index	DAD _{no} RfD _{noh} HQ HB	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	7.00E-05	1.38134E-09	1.66713E-09	7.29083E-09	5.0837E-09	1.36567E-08 2.00E-05 0.000682836		1.04478E-06 4.00E-03 0.000261195	2.9290&E-08	4.46812E-08	2.92157E-08	1.659166-08	3.7613E-07	4.00E-02	6.01476E-07 3.80E-03 0.000158283	4.37187E-07 2.00E-02 2.18594E-05	7.00E-04	0.001862259 6.20E-03 0.300364356	3.11443E-08 2.00E-02 1.55722E-06	2.00E-0
		Sum Rt	fraction	·····	801E-12	9 66E-12	4 17E-11	2.91E-11	7.81E-11	1 99E-08	9 72E-10	9 93E-11	1 58E-09	1 025-11	1 73E -11	1 35E-08	0 00E+00	1 24E-10	5 65E-10	2.05E-11	0 00E+00	571E-11	0 00E+0
 		Sum HI	fraction		0	0			0 000683579	0	0 000309367	0	0	o o	0		4 344745.05	0.0001.60004	3 19970E 06	1 577015 05	0 309055784	2 2705/5 0/	0.00154678

TABLE 7-12
CTE RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (MODERATE TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

										Chemical	of Potential C	oncern						_
						_					_							1
èccosure Route	Parameter	Symibol	Units	Dibenzo(a,h)Anihracene	DibenzoAuran	Hexachiaro-1,3-Butadiene	Hexachloroberzene	Indeno(1,2,3-cd)Pyrene	2-methymaphthalene	Naphthalene	Nfrobenzene	Nirosodi-n-propy/amine	Pentochlorophenol	Teitochloroeithene	Trichlame	Viryl Chloride	Total	
	POF concentration	C.	υg/I	0.0000858	0.00032505	0.00029353	0.0007548	0.0000924		0 16182	0.017484	1.8954	0.00178088	0.26	5.74	0.08541	_	
_	POE concentration POE concentration	C.	mg/m3	0.0000858	0.00032505	0 00029353	0.0007548	0.0000924		0.16182	0.017484	1.8954	0.00178088	0.26	5 74	0.08541		1
of groundwater		iR	i/d	0.000000	0.0000.000	0 00027000	0.000.040	0.0000721		O, TOTOL	00.7-0-	120734	000170000	0.20	3/4	0.000-1		1
	Water Ingestion rate	EF	d∕y															1
	Expasure frequency	ED .	α/ γ Υ															1
	Exposure duration	ВW	y Ko														'	l
	Body weight	AT _c	d															!
	Averaging time carcinogens Averaging time non-carcinogens	Aĭne	ď															
			_															l
	Average Intake from ingestion cardinogens	ro Lo	mg/kg-d	4.20245E-13	1.59208E-12		3.69698E-12			7 92588E-10	8.563.59E-11		8,72268E-12					
	Ingestion Cancer Slope Factor	CSF ₆	kg-d/mg	7.30E+00		7 80E-02	1 60E+00	7.30E-01				7 00E+00	1.206-01	5.40 E-01	2.006-02	7 206-01		
	Risk	R	fraction	3.07E-12		l 12E-13	5.92E-12	3.30E-13				6.50E-08	1 05E-12	6.88E-10	5.62E-10	3.01E-10		1
	Total carcinogenic risk for exposure route	R,	fraction													* 1	7 62E-0 8	1
	Average Intake from ingestion non-caranogens	l _a	mg/kg-d	2.94171E-11	1 11446E-10	1 00639E-10	2.58789E-10	3 168E-11		5.54811E-08	5.994515-09	6 49851 E-07	6 10587E-10	8.91429E-08	0.000001968	2,92834E-08		
	ingestion Reference Dose	RfD _{int}	mg/kg-a		4 005-03	2.00E-04	8.00E-04		4 00E-03	2.00E-02	5.00E-04		3.00E-02	1 00E-02	3 006-04	3 00E-03		1
	Hazard Quotlent	HQ	mg/kg-a		2.78614E-08	5.03194E-07	3.23486E-07			2.77406E-06	1 1989E-05			8.91429E-06		9 76114E-06		
	Total Hazard Index	на	mg/kg-d														″81.58E-022	4
					0.00000000	0.000000000	0.0007540	0.00000004		0.14100	0.017.01	1.00**	0.00170000					
Dermal contact	POE concentration	C.,	ug/I	0.0000858	0 00032505	0.00029353	0.0007548	0 0000924		0 16182	0.017484	1.8954	0.00178088	0.26	5.74	0.08541		1
with groundwater		tevent	hr _															1
	absorbed dose per event	Doevent	mg/cm2-even	8 45671E-10	171575E-10	20/8/1E-10	1 (E3006E-09	6.20134 E-10		3.51617F 08	4.70403E-10	2.26317E-08	6.30557E-09	4 8138E-08	3.35764E-07	2 11254E-09		1
	Event frequency	EV	events/day															1
	Exposure duration	ED	у															ı
	Exposure frequency	EF.	d/y_)
	Skin surface area	SA	cm2															1
	Boay welght	BW	k g															ĺ
	Averaging time	AT	ď∕y															ı
	Averaging time non-cordinagens	Aĭn _e	đ															l
	Absorbed dose for cardinogens	DAD	mg/kg-d	3.4172E-10	6 93303E-11	8.39967E-11	4 1 <i>62</i> 28E-10	2.50585E-10		1 42082E-08	1 90081E-10	9 14 <i>5</i> 05E-09	2.54797E-09	1 94517E-08	1.35676E-07	8 53641E-10		
	Derma! Cancer Slope Factor	CSF.	kg-d/mg	7.30E+00		7 BOE-02	1 60E+00	2.305-01				1.80€+00	1 20E-01	5.40E-01	3.00E-03	7.20E-01		ı
	Risk	R	fraction	2.49E-09		6.558-12	6-66E-10	5.76E-11				1 65E-08	3.06E-10	1.05E-08	4 07E-10	6.15E-10		ı
	Total carcinogenic risk for exposure route	R,	fraction														6 78E-08	1
	Absorbed dose for non-carcinogens	DADne	mg/kg-ai	2.39204E-08	4.85312E-09	5.87977E-09	2.91359E-08	I 75409€-08		9 94575E-07	1.33057E-08	6 40154E-07	1 78358E-07	1 36162E-06	9 49732E-06	5.97548E-08		
		RfD _{trh}	mg/kg-d	20,2040	4 006-03	2.005-04	8.00E-04		4.00E-03	2.006-02	5 005-04	J-015-C-07	3 00E-02	1 00E-02	4.50E-05	3 00E-03		
	Dermal Reference Dose	HQ	mg/kg-d			2.93989E-05			- TANKE (M)		2.66113E-05				0.211051526			1
	Hozord Quotient	HI	mg/kg-d		1210200-00	2/3/0/20	3,0417712-03			4 77 207 1-00	2-00113L-03		3 740231-00	0.000130102	0.211031320	1771652-65	5 19E-01	
	Total Hazard Index	- FN	пуулу-а			_											3 175-01	┢
																	1 34E-07 9 <i>5</i> 9E-09	
		Sum Rt	fraction	2.50E-09	0.00E+00	6 66E-12	6.72E-10	5 80E-11		0 00E+00	0 00E+00	8 14E-08	3 07E-10	1 125-08	9 691-10	9 166-10	9 59E-09 1 44E-07	╁╴
																	5 33E-0	\vdash
																	1 78E-03	اد

TABLE 7-13
CTE RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (LOW TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

													Chemicals	of Potential Co	oncern							
Exposure ource Medium Medium E	Exposure Point	Exposure Route	Parameter	Symbol	Urats	Non Contaminant- Specific Parameters	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichlaroethane	Total 1,2 Dichloroethene	1,2,4 Trichlorobenzene	i.2-Dichloroethane	1,2-Dichloropropane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	2,4,6-Trichlorophenol	2,4-Dinitrotokvene	2.6-Dinitrototuene	2-Chlorophenol	3,3-Dichlorobenzidine	4.6-Dinitro-2-Meltryl Phenol	
Groundwater Groundwater	Excavation	Incidental ingestion of groundwater	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT _c ATn _c	ug/i mg/m3 Vd d/y y kg d d	0.04 219 1 70 25,550 365	0.004371 0.004371	0.03861 0.03861	0.5766 0.5766	1.5 1.5		0.06786 0.06786	0 03627 9.03627	3.42 3.42	2.47 2.47	0.009114 0.009114	0.27729 0.27729	0.01256 0.01256	0.1674 0.1674	0.014043 0.014043	0.009021 0.009021	
			Average intake from ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R	mg/kg-d kg-d/mg traction traction		2.1409E-11 2.00E-01 4.28E-12	1.8911E-10 5.70E-02 1.08E-11	2.824165-09	7.34694E-09	9.795925-09	3.323765-10 9 105-02 3.025-11	1.27649E-10 6.80E-02 1.21E-11	1.67515-08	1,2098E-08 2,40E-02 2,90E-10	4.464E-11 1.10E-02 4.91E-13	1.35816E-09 6.80E-01 9.24E-10	6.70E+00	8.199186-10	6.87825-11 4.505-01 3.106-11	4.4164SE-11	4.00E
			Average intake from ingestion non-carcinogens ingestion Reference Dase Hazard Quotient Total Hazard Index	RfD _{rrh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1.49863E-09 6.00E-02 2.49771E-08	1.32377E-08 4.00E-03 3.30943E-06	1.97691E-07 1.00E-01 1.97691E-06	5.14286E-07 1 00E-02 5.14286E-05	1.00E-02		1,24354E-08 1,10E-03 1,13049E-05	1.17257E-06 3.00E-02 3.90857E-05	8.46857E-07 3.00E-02 2.82286E-05	3.1248E-09 1.00E-04 0.000031248	9.50709E-08 2.00E-03 4.75354E-05	1.00E-03	5 00E-03	4.814745-09	3.092915-09 1.00E-04 3.092915-05	7.006
		Dermal contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	C _w tevent Daevent EV ED EF SA BW AT AIn _e	ug/I hr mg/cm2-event events/day y d/y cm2 kg d/y d	4 1 1 219 3,300 70 25,550 365	0.004371 1.75629E-10	0.03861 1.27153E-09	0.5766 1.8216E-08	1.5 5.38343E-08	_	0.06786 1.34258E- 0 9	0 03627 1.35765E-09	3.42 9.77486E-07	2.47 5.222845-07	0.009114 2.08078E-09	0.27729 5.36395-09	0.01256 0	0.1674 6.71769 6. 09	0.014043 1.66318E-09	0.009021 1.88164E-10	
			Absorbed dose for carranogens Dermal Cancer Slope Factor Risk Total carranogenic risk for exposure route	DAD _e CSF _e R R _t	mg/kg-d kg-d/mg fraction fraction		7.09685E-11 2.00E-01 1.42E-11	5.1385-10 5.706-02 2.935-11	7.36074E-09	2.17535E-08	3.16667E-07	5.42512E-10 9.10E-02 4.94E-11	5.486E-10 6.80E-02 3.73E-11	3.94984E-07	2.11046E-07 2.40E-02 5.07E-09	8.40806E-10 1 10E-02 9,25E-12	2.16745E-09 8.00E-01 1.73E-09	0 6.70E+00 0.00E+00	2.71456-09	6.7206E-10 4 50E-01 3.02E-10	7.60336E-11	4 00E-
			Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{inh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4.96779E-09 6.00E-02 8.27966E-08	3.5766E-08 4.00E-03 8.9915E-06	1.00E-01	1.00E-02	2.21667E-05 1.00E-02 0.002216668	2.00E-02	3.8402E-08 1 10E-03 3.49109E-05	3.006-02	1.47732E-05 3.00E-02 0.000492441	5.88564E-08 1 00E-04 0.000588564	1,51722E-07 2,00E-03 7,58608E-05	0 1.006-03 0	1,90015E-07 5,00E-03 3,8003E-05	4.704426-08	5.322356-09 1.00E-04 5.322356-05	7.00E-
Corcinogenic risk - all routes (detected Corcinogenic risk - all routes (undetecte DTAL CARCINOGENIC RISK - ALL ROUTE	ed organics)			Sum Rt	fraction		1.855-11	4015-11	0 00E+00	0 00E+00	0.00€+00	7 96 5 -11	4 94E-11	0 00E+00	5.36E-09	9 74E-12	2.665-09		0.00€+00	3.33F-10	0 00E+00	
ion-Carcinogenic risk - all routes (detection-Carcinogenic risk - all routes (under OTAL NON-CARCINOGENIC HAZARD IN	tected organics)			Sum HI	fraction		1 07774E-07	1,230096-05	7 12943E-06	0 000203703	0.002285239	3 06211E-06	4 62159E-05	0 000960715	0.00052067	0.000619812	0.000123396		4 94818E-05	,	8 41527E-05	

Notes: 1- ug/l = micrograms per Liter 2- ug/m3 = micrograms per cubic meter

3- h/d = hours per day 4- Vd = liters per day 5- d/y = days per year

6- y = year 7- kg = kliogram 8- al = clay 9- hy = hour

10- mg/kg-d = mlligrams per kliogram per day 11- kg-d/mg = kliograms per day per mlligram

12- cm2 = square continueter
13- m3/hr = cubic meter per hour
14- mg/m3 = mttgrams per cubic meter

TABLE 7-13
CTE RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (LOW TCE SLOPE FACTOR)
AMSSOUR ELECTRIC WORKS

												Chemica	s of Potential C	Concern										
Exposure Route	Parameter	Symbol	Units	Aroctor-1221	Aroctor-1232	Aroclor-1242	Aroctor-1248	Aroctor-1254	Aroctor-1260 [Fillered]	Benzene	 Benzo(a)anthracene	Вепаріа) ругепе	Benzo(b)fluoranthene	Benzo(k)fluoranthene	bs(2-Chloroethyl) Ether	bs(2-Chlorokopropy)) Ether	Bis (2-ethythexy) phthalate)	Bromodichloromethane	Carbon Tetrachlaride	Chkrobenzene	Chlorodibromomethane	Chloroform	Dibenzo(a,h)Anitracene	
cidental ingestior of groundwater	POE concentration POE concentration Water Ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT., AIn.,	ug/i mg/m3 Vd d/y y kg d	0.00005713 0.00005713	0.00006875 0.0000687\$	0.0000394 0.0000394	0.00002561 0.00002561	0.00004334 0.00004334	0.001773 9.001773	0 562 0.562	0.00027974 9.00027974	0.00026004 0.00026004	0.00016038 0.00016038	0.000924 0.000924	1,404 1,404	0.20358 0.20358	0.04728 0.04728	0.585 0.585	0.003906 0.003906	507 507	0.04797 0.04799	3.042 3.042	0.0000858 0.0000858	
	Average intake from ingestion corcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R _i	mg/kg-d kg-d/mg fraction fraction	2.79826-13 4.006-01 1 126-13	3.37714E-13 4.00E-01 1.36E-13	1.92965-13 4.006-01 7.726-14	1.25437E-13 4.00E-01 5.02E-14	2.12278E-13 4.00E-01 8.49E-14	8.68406E-12 4.00E-01 3.47E-12	2.75265E-09 5.50E-02 1.51E-10	1,370165-12 7,306-01 1,006-12	1.27367E-12 7.30E+00 9.30E-12	7.85535E-13 7.30E-01 5.73E-13	4.525715-13 7.305-02 3.305-14	6.87673E-09 1 10E+00 7.56E-09	9.97127E-10	2.31576E-10 1 40E-02 3.24E-12	2.86531E-09 6.20E-02 1.78E-10	1.913146-11 1.306-01 2.495-12		2.34955E-10 8.40E-02 1.97E-11	1,48976E-08	4,20245E-13 7,30E+00 3,076-12)
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	KfD _m h HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.95874E-11	2.3645-11	1.350866-11	8.780576-12	1,485946-11 2,006-05 7,429716-07	6.07866E-10	1.92686E-07 4.00E-03 4.81714E-05	9.59109E-11	8.91566E-11	5.498746-11	3.1686-11	4.813718-07	4.00E-02		2.00571E-07 2.00E-02 1.00286E-05	7.00E-04	0.000173829 2.00E-02 0.008691429	1.64469E-08 2.00E-02 8.22343E-07	1.04297E-06 1.00E-02 0.000104297	2.94171E-11	1.1144 4.00 2.7861
Dermal contact with groundwater	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carainogens	C, tevent Daevent EV ED SA BW AT AIne	ug/l hr mg/cm2-even events/day y d/y cm2 kg d/y d	0.00005713 4,88352E-11	0.00006895 5.8939E-11	0.0000394 2.57757E-10	0.00002561 1.79727E-10	0.00004334 4.828146-10	0.001773 1.233526-07	0.562 3.69367E-08	0.00027974 1.095536-09	0.00026004 1.66035E-09	0.00016038	0.0000924 5.86572E-10	1.404 1.329756-08	0.20358 5.92563E-08	0.04728 2.12643E-08	0.585 1.54561E-08	0.003906 3.43123E-10	507 6.58374E-05	0.04797 1.10106E -0 9	3.042 1.019945-07	0.0000858 8.45671E-10	
	Absorbed dose for caranogens Dermal Cancer Slope Factor Risk Total carainogenic risk for expasure route	DAD _a CSF _o R R _i	mg/kg-d kg-d/mg fraction fraction	1.97334E-11 4.00E-01 7.89E-12	2.38162E-11 4.00E-01 9.53E-12	1.04155E-10 4.00E-01 4.176-11	7.26243E-11 4.00E-01 2.90E-11	1.950965-10 4.005-01 7.805-11	4.98444E-08 4.00E-01 1.99E-08	1.49255E-08 5.50E-02 8.21E-10	4.184375-10 2.355-01 9.835-11	6.66875E-10 2.35E+00 1.57E-09	4.17367E-10 2.30E-02 9.60E-12	2.37023E-10 7.30E-02 1.73E-11	5.37329E-09 1.10E+00 5.91E-09	2.394445-08	8.59251E-09 1.40E-02 1.20E-10	6.24553E-09 6.20E-02 3.87E-10	1,3865E-10 1,30E-01 1,80E-11	2.66037E-05	4.44919E-10 8.40E-02 3.74E-11	4.121395-08	3.41726-10 7.306+00 2.496-09)
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{mh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.381346-09	1.66713E-09	7.290836-09	5.08376-09	1.36567E-08 2.00E-05 0.000682836	3,489115-06	1.04478E-06 4.00E-03 0.000261195	2.92904E-08	4.668125-08	2.921.57E-08	1.65916E-08	3.76135-07	4.00E-02	4.01476E-07 3.80E-03 0.000158283	4.37187E-07 2.00E-02 2.18594E-05	7.00E-04	0.001862259 6.20E-03 0.300364356	2.00E-02	2.884975-06 2.00E-03 0.001442485	2.372045-08	4.85312 4.00 1.21326
		Sum Rt	fraction	801E-12	9 66E-12	4175-11	2.91E-11	7.815-11	1 996-08	9.72E-10	9 93E-11	1.58E-09	1,026-11	1.73E-11	1.355-08	0.00E+00	1.245-10	5 65E-10	2.05E-11	0.00€+00	57IE-11	0 00E+00	2.50E-09	0.00

TABLE 7-13
CTE RISK CALCULATIONS FOR OFF-SITE CONSTRUCTION WORKER (LOW TCE SLOPE FACTOR)
MISSOURI ELECTRIC WORKS

			_				· · · · · · · · · · · · · · · · · · ·	Chemical	of Potential C	oncern					T T	
Exposure Route	Parameter	Symbol	Unds	Hexachloro-1,3-Butadiene	Hexachlorobenzene	indeno(1,2,3-cd)Pyrene	2-methyinaphthalene	Naphthalene	Nitrobenzene	Nitrosodi-n-propykamine	Pentachlorophenal	Tetrochloroethene	Trichloroeithene	Vinyl Chloride	Total	
ncidental ingestion	POE concentration	C,		0.00029353	0.0007548	0.0000924		0.16182	0.017484	1.8954	0.00178088	0.26	5.74	0.08541		
of groundwater	POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., IR EF ED BW AT _e ATn _e	mg/m3 Vd d/y y kg d	0.00029353	0.0007548	0.0000924		0.16182	0.017484	1,8954	0.00178088	0.26	5.74	0.08541		
	Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	i., CSF., R R,	mg/kg-d kg-d/mg fraction fraction	1.43776-12 7.806-02 1.125-13	3.69698E-12 1.60E+00 5.92E-12	4.52571E-13 7.30E-01 3.30E-13		7.92588E-10	8.56359E-11	9.283598-09 7 00E+00 6.50E-08	8.72268E-12 1.20E-01 1.05E-12	1.27347E-09 5 40E-01 6.88E-10	2.81143E-08 6.00E-03 1.69E-10	4.18335E-10 7 20E-01 3.01E-10	7.596-09	5
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	l, RfD _{mb} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.00639E-10 2.00E-04 5.03194E-07	8.00E-04	3.1686-11	4.00E-03	5.54811E-08 2.006-02 2.77406E-06	5.994516-09 5.006-04 1.19896-05	6.498516-07	6.10587E-10 3.00E-02 2.03529E-08	1.006-02	0.000001968 3.00E-04 0.00656	2.92834E-08 3.00E-03 9.76114E-06	1.566-02	
Dermal contact with groundwater	POE concentration event duration	C _w	ug/l hr	0.00029353	0.0007548	0.0000924		0.16182	0.017484	1.8954	0.00178088	0.26	574	0.08541		
	absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-caranogens	Doewent EV ED EF SA BW AT AIn _o	mg/cm2-even events/day y d/y cm2 kg d/y d	2.078715-10	1.030045-09	6.201346-10		3.516176-08	4.704035-10	2263176-08	6.30557E-09	4.81386-08	3.35764E-07	2.11254E-09		
	Absorbed dose for carcinogens Dermal Cancer Slope Factor	DAD _e CSF _e	mg/kg-d kg-d/mg	8.39967E-11 7.80E-02	1 60E+00	2.30E-01		1.420826-08	1.90081E-10	9.14505E-09 1.80E+00	2.54797E-09 1.20E-01	1.94517E-08 5 40E-01	1.35676E-07 9.00E-04	8.53641E-10 7.20E-01		
	Risk Total carcinogenic risk for exposure route	R R _i	fraction fraction	6.55E-12	6.66E-10	5.76E-11				1,656-08	3.065-10	1,056-08	1.225-10	6.15E-10	6.76E-08	4
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient	DAD _{ne} RfD _{mh} HQ	mg/kg-d mg/kg-d mg/kg-d	5.87977E-09 2.00E-04 2.93989E-05	8.00E-04	1.75409E-08	4.005-03	9.94575E-07 2.00E-02 4.97287E-05	1.330576-05 5 006-04 2.661136-05	6,401545-07	1.783586-07 3.00E-02	1,36162E-06 1,00E-02	9,49732E-06 4 50E-05 0,211051526	5.97548E-08 3 00E-03 1,99183E-05		
	Total Hazard Index	H	mg/kg-d	#10/0/S-00					4,40114,3034	· · · · · · · · · · · · · · · · · · ·				.571000-03	5.196-01	9
															1.33E-07	
		Sum Rt	fraction	6 66E-12	6 72E-10	5.80E-11		0 00E+00	0.00€+00	8 14E-08	3 07E-10	1 125-08	2.915-10	9 16E-10	9 59E-09 1.43E-07	
															5.33E-01 1 78E-03	
		Sum HI	fraction	2.99021E-05	3 67434E-05	0		5.25028E-05	3.86004E-05	0	5 96561E-06	0.000145076	0.217611526	2 96794E-05	5.35E-01	

TABLE 7-14
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

																Chemicals	of Potential Co	oncem						
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Porameter	Symbol	Units	Non Contominani- Specific Parameters	1,1,2,2-Tetrachioroethane	1,1,2-Trichlaroethane	1 1-Dichlaroethare	Total 1,2 Dichlarcethene	1,2,4 Irichiorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3-Dichlorobergene	1,4-Dichlorobenzene	2.4,6-Trichtorophenol	2.4-Dinitrotokuene	2.6-Dinitrotoluene	2-Chlorophenol	3.3-Dichlarobenzialne	4,6-Dinitro-2-Methyl Phenol		
									_															
Groundwater	Ař	indoor air	Vapour intrusion - Inhalation	POE concentration POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Coh Coh R ET ET ED BW ATo ATo	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25,550 2,190	7.59E-06 7.59E-09	9 30E-05 9 30E-08	2.27E-03 2.27E-06	7 42E-03 7.42E-06	4.09E-03 4.09E-06	1 925-04 1 925-07	1.06E-04 1.06E-07	8.90E-06 8.90E-06	6.16E-03 6.16E-06	0 00E+00 0 00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	3.06E-07	0 00E+00 0 00E+00		6.76E-08 6.76E- 11	0 00EH
				Average intake from inhalation carcinogens Inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l _e CSF _{ech} R R _i	mg/kg-d kg-d/mg fraction fraction		4 19218E-10 2.03E-01 8 51E-11	5.13666E-09 5.70E-02 2.93E-10	1.25379E-07	4 09828E-07	2.25902E-07	1.06047E-08 9.10E-02 9.65E-10	5.85468E-09	4 91573E-07	3.40235E-07 2.206-02 7.49E-09	0 1 096-02 9.00 6+ 00	D	0	1.69013E-08	0	0	3 73374E-12 4.00E-01 1.49E-12	4.00E- 0.00E+
				Average Intake from Inhalation non-carcinogens Inhalation Reference Dose Hazard Quotient Total Hazard Index	RfD _{mh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	_ _	4.89087E-09	5 99277E-08	1.46275E-06		1 145-03		1 145-03	5 73501E-06	3.9694E-06 2.30E-01 1.72583E-05	0	0	0	1 97181E-07	0	0	4.35603E-11	
	Groundwater	Tap Water	ingestion of tap water	POE concentration POE concentration Water Ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C# C# IR EF ED BW AT ₀ ATn ₆	ug/l mg/m3 l/d d/y y kg d	1 350 6 15 25,550 2,190	0.049115 0.049115	0 15444 0.15444	6.479 6.479	10 97 10 97	60.52 60.52		0 14508 0 14508	43.99 43.99	49 62 49 62		1 10916 1 10916	0.1411 0.1411	1.881 1.881	0 157795 0 157795		0.229 0.229	0.1326 0.1326
				Average intake from ingestion carcinogens ingestion Concer Slope Factor Risk Total carcinogenic risk for expasure route	CSF。 R R	mg/kg-d kg-d/mg fraction fraction		2.69123E-07 2.00E-01 5.38E-08	8.46247E-07 5 70E-02 4.82E-08	3.55014E-05	6.01096E-05	0.000331616	1 48734E-06 9 10E-02 1.35E-07	7.94959E-07 6.80E-02 5.41E-08	0.000241041	0.00027189 2.40E-02 6.53E-06	5.61151E-07 1 10E-02 6.17E-09	6.07759E-06 6.80E-01 4.13E-06	7 73151E-07 6.70E+00 5 18E-06	1.03068E-05	8.6463E-07 4.50E-01 3.89E-07	5.554256-07	1.254796-06 4 006-01 5.026-07	4 005-
				Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	KTD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	4.00E-03	0.000414183 1.006-01 0.004141826	1.00E-02	1.005-02	2.00E-02	1 10E-03	3 00E-02	3.00E-02	6 54676E-06 1 00E-04 0 06546758	2.00E-03	9.02009E-06 1 00E-03 0.009020091	5 00E-03	1.00874E-05	6.47995E-06 1 00E-04 0.064799543	1.46393E-05 7.00E-05 0.20913242	8 4907854
			Dermal contact with tap water	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skih surface area Body weight Averaging time Averaging time non-carcinogens	C _w tevent Doewer EV ED EF SA BW AT AIn _b	ug/l hr mg/cm2-eve events/day y d/y cm2 kg d/y d	nt † 6 350 6.600 15 25.550 2.190	0.049115 9 08634E-10	0 15444 2.12216E-09	6.A79 7.68822E-08	10 97 1 470426-07	60 52 1 16844E-05		0 14508 2.10687E-09	43.99 5.93365E-06	49.62 4.85357E-06	0 10241 1.14437E-08	1 10916 1.00576E-08	0 1411 0	1.881 3 107746-08	0 157795 9 3442E-09		0.229	0.132f
				Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{der} R R ₁	mg/kg-d kg-d/mg fraction fraction		3.28602E-08 2.00E-01 6.57E-09	7.67467E-08 5.70E-02 4.37E-09	2.7804E-06	5.31769E-06	0.000422559	7.25641E-08 9.10E-02 6.60E-09		0.000214587	0.000175526 2.40E-02 4.21E-06	1 106-02	3.63728E-07 8 00E-01 2.91E-07	0 6.70E+00 0.00E+00	1.1239E-06	3.37927E-07 4 50E-01 1,52E-07	3.684397E-08	0 4.00E-01 0.00E+00	2.05297E-0 4.00E-0 8.21E-0
				Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quofient Total Hazard Index	DAD _{no} RfD _{com} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	8.95378E-07 4.00E-03 0.000223845	1.00E-01	6.20397E-05 1.00E-02 0.006203967	1.005-02	2.00E-02	1 10E-03	3.00E-02	3.00E-02	4.82829E-06 1 00E-04 0.048282863	2.006-03	1 00E-03	1.31122E-05 5.00E-03 0.002622435	3.94248E-06	4.298465-07 1 00E-04 0.00429846	0 7 005-05 0	2.39513E-(
nly calculated f	Air or COPC with Henry	indoor Air 's Law > 1e-5 atm m3/	Vapors from tap water mot those with a "Y")	Concentration in top water Concentration in top water Volatilization factor POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens	C. VF C. Jugo IR ET EF ED BW AT	ug/l mg/m3 dimensionles mg/m3 m3/hr h/d d/y Y kg d	0 42 24 350 6 15 25 550		0.15444 D 15444 Y 0.00007722	6 479 6.479 y 0.0032395	10 97 10 97 7 9.005485	60.52 60.52 0.03026	0 27144 Y		43.99 43.99 y 0.021995	49 62 49.62 Y 0.02481		1 10916 1.10916 0	0 1411 0 1411 0	1 881 1.881 0 0009405	0.157795 0.157795 0		0.229 0.229 7 0.0001145	0 1322 D 1322
				Averaging time non-carcinogens Average intake from inhalation carcinogens	Aīn _e	d mg/kg-d	2,190	1.35638E-06	4,26508E-Q6	0 000178927	0 000302952	0.001671347	7 496215-06	4.00659E-06	0.001214847	0.001370328	0	0	0	5 19465E-05	0	0	6 324165-06	

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TABLE 7-14
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

											_					Ch	emicals of Pot	ential Concer	n						
Samura Broth	Dominos de la composition della composition dell	Sambol	l folke	.rocka-1232	rociar-1242	vockor-1248	.nocker-1254	uocko-1260 (Filtered)	erzane	enzo(a) antitracene	erzo(c) pyrene	erzo(b)fluoranthene	erzo(k)fiJoranthene	is[2-Chloroethyl] Elher	k[2-Chlorokopropy] Effin	s (2-ethylhexyl phifhciale	romodichloromethane	Carbon Telrachloride	Horobergene	thereformerhane	Hordom	lberzo(α.h)Anthracene	lberzolum	exactitoro-1,3-Butadiene	
Exposure Route	Parameter	Symbol	UNIS		<u>«</u> _				<u> </u>		<u>&</u> _	<u> </u>	<u> </u>	<u> </u>				<u> </u>		0				<u> </u>	
Vapour intrusion - introlation	POE concentration POE concentration Inholation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carchogens	Co-s Co-s IR ET ED BW ATo	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00E+00 0.00E+00	3.48E-08 3.48E-11	0.00E+00 0.00E+00	5.00E-08 5.00E-11	2.08E-06 2.08E-09	2.17E-03 2.17E-06	0.00E+00 0.00E+00	0.00E+00 0.00E+00	5.21E-08 5.21E-11	0.00E+00 0.00E+00	4.116-04 4.116-07	13.00E+00 0.00E+00	0.00E+00 0.00E+00	1.20E-03 1.20E-06	3.04E-05 3.04E-08	1.52E+00 1 52E-03		1.13E-02 1 13E-05	0.00E+00 0.00E+00		7 48E-07 7.46E-10	
	Average intake from inhalation carcinogens inhalation Cancer Sope Factor Risk Total carcinogenic risk for exposure route	l _e CSF _{bah} R R,	mg/kg-d kg-d/mg fraction fraction	0 4,005-01 0,005+00	1 9221E-12 4 00E-01 7.69E-13	0 4.00E-01 0.00E+00	2.76164E-12 4.00E-01 1 10E-12	4.00E-01	1 19855E-07 2.73E-02 3.27E-09	0 3.08E-01 0.00E+00	0 3 08E+00 0 00E+00	2.87763E-12 3.08E-01 8.86E-13	0 3 08E-01 0.00E+00	2.27007E-08 1 16E+00 2.63E-08	0	0	6.62795E-08	1 67908E-09 5.20E-02 8.73E-11	8.3954E-05	5.45148E-09	6 24132E-07 8.10E-02 5.06E-08	0 3.08E-01 0.00E+00	1.79507E-08	4 13142E-11 7.70E-02 3 18E-12	1 6
	Average Intake from Inhalation non-carcinogens Inhalation Reference Dose Hazard Guotient Total Hazard Index	RID _{EE} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		2.242455-11	0	3.22192E-11	1,34032E-09	1 39831E-06 8.57E-03 0 000163164	0	0	3.35724E-11	0	2.64842E-07	0	0	7.7326E-07		0.000979463 1 70E-02 0 057615471	6 36007E-08	7.28153E-06	0	2.09425E-07	4.81999E-10	7.73:
ingestion of top water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging firme non-carcinogens	C., C., IR EF ED BW AT _o AIn _o	ug/i mg/m3 Vd d/y y kg d d	0.1603 0.1603	0.0916 0.0916	0 05954 0.05954	0 10076 0 10076	4.122 4.122	75.73 75.73	0 65036 0 65036	0.60456 0.60456	0.922185 0.922185	0.5313 0.5313	5.616 5.616	0 81432 0.81432	109.92 109.92	234 234	0.04389 0.04389	2901.18 2901 18	0 19188 0 19188	12 168 12.168	0.49335 0.49335	0 7557 0 7557	0.68242 0.68242	
	Average intake from ingestion carcinogens ingestion Concer Stope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction	8 78356E-07 4 00E-01 3.51E-07	5.01918E-07 4 00E-01 2.01E-07	3.26247E-07 4 00E-01 1.30E-07	5.5211E-07 4 00E-01 2.21E-07	4 00E-01	5.50E-02	3.56362E-06 7.30E-01 2.60E-06	3.31266E-06 7.30E+00 2.42E-05	5 05307E-06 7.30E-01 3.69E-06	2.91123E-06 7.30E-02 2.13E-07	3.07726E-05 1 10E+00 3.38E-05	4.46203E-06	0 000602301 1 40E-02 8 43E-06	1.28219E-05 6.20E-02 7.95E-07	1.305-01	0 015896877	1.0514E-06 8.40E-02 8.83E-08	6 6674E-05	2.70329E-06 7 30E+00 1.97E-05		3 73929E-06 7 80E-02 2 92E-07	:
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	I, RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.02475E-05	5 85571E-06	3.80621E-06	6.44128E-06 2.00E-05 0.322063927	0 000263507	0 004841187 4.005-03 1.210296804	4.15755E-05	3.86477E-05	5 89525E-05	3 39644E-05	0 000359014	4 00E-02	0 007026849 2.00E-02 0.351342466	0.000149589 2.00E-02 0.007479452	7 00E-04	0 185463562 2.00E-02 9.273178082	2.006-02	1.00E-02	3 15384E-05	4 83076E-05 4 00E-03 0 012077397	4.3625E-05 2.00E-04 0.278125114	
rermal contact with tap water	POE concentration event duration absorbed dase per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time non-carcinogens	C _w tevent Doewen EV ED EF SA BW AT AIn ₆	ug/l hr mg/cm2-even events/day y d/y cm2 kg d/y d	0 1603 6 85129E-08	0.0916 2.99626E-07	0.05754 2.08921E-07	0.10076 5.6124E-07	4.122 0.000143389	75.73 1 76209E-06	0 65036 1.20373E-06	0.60456 1.91842E-06	0.922185 2.96952E-06	0.5313 1 6864E-06	5 616 2.26685E-08	0.81432 1 1527E-07	109.92 2.47184E-05	2.34 2.80879£-08	0.04389 1.74395-09	2901.18 0 000152749	0.19188 2.14049E-09	12.168 1.61945-07	0.49335 2.4313E-06	0.7557 1 98459E-07	0.68242 2.41637E-07	4 62
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{der} R R _t	mg/kg-d kg-d/mg fraction fraction -	2.47773E-06 4.00E-01 9.91E-07	1.08358E-05 4 00E-01 4 33E-06	7.5555E-06 4.00E-01 3 02E-06	2.02969E-05 4.00E-01 8.12E-06	4 00E-01	6.37248E-05 5.50E-02 3.50E-08	4.35323E-05 2.35E-01 1.02E-05	6.93786E-05 2.35E+00 1.63E-04	0 000107391 2.305-02 2.475-06	6 09875E-05 7 30E-02 4.45E-06	8.19794E-07 1 10E+00 9.02E-07	4.16866E-06	0 000893926 1 40E-02 1,25E-05	1.01578E-06 6 20E-02 6.30E-08	6.30671E-08 1.30E-01 8.20E-09	0.005524088	7.74093E-08 8.40E-02 6.50E-09	5 85645E-06	8 79266E-05 7.30E+00 6 42E-04		8.73864E-06 7.80E-02 6 82E-07	
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{rec} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.89068E-05	0.000126418	8.814755-05	0 000236797 2.00E-05 11.83985998		0.000743456 4.006-03 0.185863921	0.000507877	0.000809417	0.001252895	0 00071152	9.56426E-06	4 005-02	0.010429134 3 80E-03 2.744508883	2.006-02	7.00E-04	6.20E-03	2 006-02	2.00E-03	0 00102581	8.37333E-05 4 00E-03 0 020933313	2 00E-04	
Vapors from tap water ose with a "Y")	Concentration in top water Concentration in top water Volatilization factor Pole concentration Inhabition rate Exposure time Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C VF Co-kap IR ET EF ED BW A To-q	ug/I mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d	0 1603 0 1603 0	y	D 05954	0.10076 0.10076 Y 0.00005038	У	75.73 y	0 65036 0 65036 0	0.60456 0 60456 0	0.922185 0.922185 0.000441093	0.5313 0.5313)	5.616 5.616 Y 0.002808	0.81432 0.81432 0	109 92 109.92 0	2.34 2.34 , 0.00117	0.04389 0.04389 9 0.000021945	2901.18 2901 18 9 1 45059	0 19188 y	у	0 49335 0.49335		0.68242 0.68242 0.00034121	y
	Average intake from inhalation carcinogens	ام ام	mg/kg-d	0	2.52967E-06	0	2.78263E-06	0 0001 13835	0 002091393	0	0	2.54675E-05	0	0.000155094	0	0	6 46225E-05	1 21209E-06	0 080120259	5.29904E-06	0 000336037	0	2 08697E-05	1. 8846E-0 5	1.8

TABLE 7-14
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

									Ch	emicals of Pot	ential Concer	1		Г
Exposure Route	Parameter	Symbol	Units	Indeno(1,2,3-cd)Pyrene	2-methy/napthalene	Naphiliciene	Minobergene	Nitrosod-n-propykanine	Pentachlarophenol	Tetrachloroethene	Trichloroethene	Vby/ Chloride	Total	
Vapour intrusion - inhalation	PQE concentration	Con	ug/m3	0 00E+00	2.195-05	2 75E-04	6.87E-06	0.00E+00	0.00€+00	1,316-03	2.506-02	9.36E-04		_
Vapourinasion-relacion	POE concentration	Con	mg/m3	D.00E+00	2.175-08	2 75E-07	6.87E-09	0.00E+00	0.00E+00	1.315-06	2.506-05	9.36E-07	ì	ĺ
	inhalation rate	iR	m3/hr	0.002.00	22.00	2,020,			0 00- 00	12.200	2.002.00	7.002.07	1	ĺ
	Exposure time	EĪ	h/d											ĺ
	Exposure frequency	F	₫/y											ı
	Exposure duration	ED	y											ı
	Body weight	BW	k o											i
	Averaging time carcinogers Averaging time non-carcinogens	AT _o ATn _o	d d											ı
		V.11.6												l
	Average Intake from Inhalation carcinogens	r ^a	mg/kg-d	0	1,20965-09	1.5189E-08	3.7945E-10	0	0		1.38082E-06	5 1698E-08		ĺ
	Inhalation Cancer Slope Factor	CSF _{bb}	kg-d/mg	3.08E-01						2.10E+00	4 005-01	3 006-02		1
	Risk Total carcinogenic risk for exposure route	R R,	fraction fraction	0.006+00						1.52E-07	5.52E-07	1.55E-09	234562	1
	-											L	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ı
	Average intake from inhalation non-carcinogens	Į,	mg/kg-d	0	1 4112E-08	1 77205E-07	4 426925-09	0	0	8.44142E-07	1 61096E-05		1	ĺ
	Inholation Reference Dose	RfD _{teh}	mg/kg-d			8 57E-04	5 71E-04			1.405-01	1 145-02	2.865-02		1
	Hazard Quotient Total Hazard Index	HQ Hi	mg/kg-d mg/kg-d			0 000206774	1.102725-06			a.u.zy57t-06	0.001413122	∡ ≀∪8891E-05 f	THESE.	
														Η
Ingestion of tap water	POE concentration POE concentration	c" c"	ug/l mg/m3	0.5313 0.5313	0.1505 0 1505	1 8183 1.8183	0.19646 0.19646	7.5816 7.5816	4 14032 4 14032	5.39 5.39	15.25 15.25	0.34164	- 1	1
	Water ingestion rate	IR	Vd	0 3313	0 1303	1.010.	0 17040	7.3010	7 17042	July	لعشبات ا			ı
	Exposure frequency	EF .	q/y											1
	Exposure duration	ĒD.	y ′											1
	Body weight	BW	kg											ı
	Averaging time carcinogens	AT _o	d											ı
	Averaging time non-carcinogens	Aĭn _e	d											ı
	Average intake from Ingestion carcinogens	L .	mg/kg-d	2.91123E-06	8.24658E-07	9 96329E-06	1.07649E-06	4 1543E-05	2.26867E-05	2.953426-05	8 35616E-05	0.000001872		ı
	Ingestion Concer Slope Factor	CSF.	kg-d/mg	7 305-01				7 00E+00	1.20E-01	5.40E-01	4 00E-01	7.20E-01		
	Risk	R	fraction	2.135-06				2.91E-04	2.72E-06	1.59E-05	3.345-05	1.35E-06		ĺ
	Total caranogenic risk for exposure route	R,	fraction									ſ	4768-04	ı
	Average intake from ingestion non-carcinogens	i,	mg/kg-d	3.39644E-05	9.621E-06	0.000116238	1.25591E-05	0.000484668	0.000264678	0.000344566	0 000974886	0.00002184		ĺ
	Ingestion Reference Dose	RfD.	mg/kg-d		4 00E-03	2.00E-02	5.00E-04		3.00E-02	1 005-02	3 00E-04	3 00E-03		ı
	Hozord Quotient	HQ	mg/kg-d		0.002405251	0 005811918	0 025118174		0.0068226	0.034456621	3.249619482	0 00728	***********	ĺ
	Total Hazard Index	н	mg/kg-d										10+346.1	┢
ermal contact with tap water	POE concentration	C.	ug/I	0.5313	0.1505	1.8183	0 19646	7.5816	4 14032	5.39	15.25	0 34164		
	event duration absorbed dose per event	tevent Daevent	hr	1 202005 04	•	1 74988E-07	0.11446.00	2 10003E 00	7 32983E-06	4 7412E-07	3 73936E-07	2.80865E-09	ı	ı
	Event frequency	EV	mg/cm2-ever events/day	1702070-00	U	1 /47002-0/	2114400-07	3.077730-00	/ 327636-06	4/4/2007	3 /3/365-0/	2.000631-07		ı
	Exposure duration	ED	v											ı
	Exposure frequency	₽	d/y											ı
	Skin surface area	SA	cm2											ı
	Body weight	BW AT	kg											ı
	Averaging time Averaging time non-carcinogens	Aĭ Aĭn∈	d√y d											ı
					_		7 / / / PAT **	1 220015 61	0.00004507	1 714/00 00	1.352326-05	1.016705.0-	1	1
	Absorbed dose for carcinogens Dermal Cancer Slope Factor	DAD _e CSF _{our}	mg/kg-d kg-d/mg	6 4477E-05 2.30E-01	0	6.32833E-06	7.64683E-08	1.3380AE-06 1.80E+00	1,20E-01	1 71463E-05 5 40E-01	1.35232E-05 6 00E-02	1.01573E-07 7 20E-01		1
	Risk	R	fraction	1.48E-05				2.415-06	3.18E-05	9.26E-06	8.11E-07	7.31E-08		ĺ
	Total carcinogenic risk for exposure route	R,	fraction	52.00					•		-,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		3.026-03	ĺ
	Absorbed dose for non-carcinogens	DAD	mg/kg-d	0.000752231	0	7.38305E-05	8,92135-07	1 56107E-05	0.003092585	0.00020004	0 00015777	1 18502E-06		ĺ
	Dermal Reference Dose	RfD _{day}	mg/kg-d	······································	4 00E-03	2.00E-02	5 006-04		3 00E-02	1.00E-02	4 505-05	3 00E-03		1
	Hazard Quotient	HQ	mg/kg-d		0	0.003691527	0 00178426		0.103086176	0.020003964	3.506007297	0.000395006		ĺ
	Total Hazard Index	H	mg/kg-d									<u> </u>	3.03€+01	-
Vapars from tap water	Concentration in top water	C"	ug/l	0 5313	0.1505	1.8183	0.19646	7.5816	4 14032	5 39	15.25	0.34164	1	ĺ
	Concentration in top water	C.,	mg/m3	0.5313	0 1 <i>5</i> 05	1.8183	0.19646	7.5816	4 14032	5.39	15 25	0.34164	i	1
	Volatilization factor	VF	dimensionless	•		y	у				у ,	y		1
hose with a "y")	POE concentration	Co-top	mg/m3	0	0.00007525	0.00090915	0 00009823	0	0	0.002695	0.007625	0.00017082		1
	inhalation rate	ER ET	m3/hr										J	ı
	Exposure time	ET EF	h/d											ĺ
	Exposure frequency Exposure duration	ED ED	d/y y											ĺ
	Body weight	BW	y ka										}	l
		AT _c	ď											ĺ
	Averaging lime caranogers													4
	Averaging firme carcinogens Averaging firme non-carcinogens	Aln.	d										l	١
				_	4.15627E-06	£ 00100 0-	5.425\$3E-06	0	•	0.0001.400.00	0 000421151	0.42400= 67	Ì	

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TABLE 7-14
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

																Chemical	of Potential C	oncern						
ource Medium	Exposure Medium	Esposure Point	Exposure Route	Parameter Inhalation Cancer Slope Factor Risk	Symbol CSF _{inh} R	Units kg-d/mg fraction	Non Contaminant- Specific Parameters	2.03E-07 2.75E-07	2.43E-07	1,1-Ochloroethane	Total 1,2 Dichiaroethane	1,2.4 Trichlorobenzene	5.1.2-0/chanesthane		1,3-Ochloroberpane	2 20E-03 3.01E-03	000 - 100 -	2.4-Diritrotoluene	2.6-Diritrotoluene	2-Chlorophenol	3.3-Dichlorobenzdene	4.6-Deilto-2-Methyl Phenol	4.005-01 2.638-06	4.00E-0 0 00E-0
				Total carcinogensc risk for expasure route Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Razard index	R, RfD _m , HQ HI	fraction mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1,582446-05	4.97 <i>5</i> 93E-05	0.002087481	0 003534444	0 019499047 1 14E-03 17 10442682		1.14E-03	0.014173216	0.015987156 2.30E-01 0.069509375	0	0	0	0.000606043	0	0	7.37819E-05	
	Surface Water	Creek	Incidental ingestion of creek water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time concinagens Averaging time non-carchagens	C., C., IR EF ED BW AT., ATn.,	ug/l mg/m3 l/d d/y y kg d	0.05 52 6 15 25,550 2,190	3.87145E-05 3.87145E-05				0.003415705 0.003415705								0.001482685 0.001482685				2.47989E-(2.47989E-(
				Average Intake from Ingestion carcinogens Ingestion Cancer Stope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R	mg/kg-d kg-d/mg fraction fraction		1 57586E-12 2.00E-01 3.15E-13	5 9803E-12 5.70E-02 3.41E-13		6.85807E-09	1 390358-10	1,05108E-11 9,10E-02 9,56E-13	6.80E-02	1,12849E-08	1 35446E-08 2.40E-02 3.25E-10	1 105-02		6.70E+00		5 06286E-12 4.50E-01 2.28E-12	3 2523E-12	1.74052E-14 4.00E-01 6.96E-15	4 00E-0
				Average intake from ingestion non-carcinogens ingestion Reference Dose Hozard Quoflent Total Hazard Index	I _u RfD _o HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1.8385E-11 6 00E-02 3 06416E-10	4 00E-03	2.42525E-09 1 00E-01 2.42525E-08	1 00E-02	1 00E-02	1.22626E-10 2.00E-02 6.13131E-09	1 10E-03		3.00E-02	1.00E-04	2.00E-03	1 00E-03		5.90667E-11	1 00E-04	2.03061E-13 7 00E-05 2.90087E-09	
			Dermal contact with creek water	POE concentration event duration absorbed close per event Event frequency Exposure duration	C _w tevent Doeven EV ED	ug/l hr f mg/cm2-even events/day y	2 1 1 6					0 003415705 9.32615E-10								0.001482685 3.66143E-11				2.47989E- 1 49895E-
				Exposure frequency Sidn surface area Body weight Averaging time Averaging time non-carcinogens	EF SA BW AT ATn _e	d/y cm2 kg d/y d	52 6,600 15 25,550 2,190																	
				Absorbed dose for carcinagens Dermal Cancer Slope Factor Risk Total carcinagenic risk for exposure route	DAD _o CSF _{der} R R _t	mg/kg-d kg-d/mg fraction fraction		5 44227E-12 2.00E-01 1.09E-12	5 706-02		1.89193E-08	5.01093E-09	1.598725-11 9 105-02 1.455-12	6.806-02		2.52537E-07 2.40E-02 6.06E-09			0 6.70E+00 0.00E+00		5.59672E-11 4.50E-01 2.52E-11	6 10206E-12	0 4 00E-01 0.00E+00	
		· · · · · · · · · · · · · · · · · · ·		Absorbed dose for non-carcinagers Dermal Reference Dose Hazard Quoflent Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.34932E-11 6 00E-02 1 05822E-09	4 00E-03		1 00E-02		2.00E-02		3.00E-02	3.00E-02	1.00E-04	2.00E-03	1.00E-03	2.29516E-09 5.00E-03 4.59033E-07	6.52951E-10	7 11907E-11 1.00E-04 7 11907E-07	7 00E-05 0	
			Carcinogenic risk - all routes (detect Carcinogenic risk - all routes (undete TOTAL CARCINOGENIC RISK - ALL RO	ected organics)	Sum Rt	fraction		3.365-07	2.96E-07	0 00E+00	0 00E+00	0 00E+00	8 25E-07	5 92E-08	0 00E+00	4 09E-05	1 075-08	4 42E-06	5 18E-06	0 00E+00	5 41E-07	0 00E+00	3 03E-06	11150
			Non-Carcinogenic risk - all routes (de Non-Carcinogenic risk - all routes (ur TOTAL NON-CARCINOGENIC HAZARI	etected organics) ndetected organics)	SmH	fraction		5.87204E-05	0.000492128	0.00444439	0.074341995	32133 <u>80 71</u>	0.083483717	0.050305795	0 177305719	0.243625516	0 113758823	0.037575024	0.000000144	0 02667235		0 069099095	0.300130493	

Notes
1-ug/1 = micrograms per tiller
2-ug/m3 = micrograms per cubic meter
3-lyd = hous per day
4-l/d = ties per day
5-d/y = days per year
6-y = year
7-kg = tilogram
6-d = day
9-ly = hout
10-mg/kg-d = mitigrams per klagram per day
11 kg-d/mg = tilograms per day per mitigram
12 cm2 = square contimeter
13-mä/hr = cubic meter per hout
14-mg/m3 = mitigrams per cubic meter

14- mg/m3 = milligrams per cubic meter 15- mg/cm2-eveni = milligrams per square centimeter per eveni 16- mg/cm3-eveni = milligrams per cubic centimeter per eveni

TABLE 7-14
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

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								<u>P</u>		Ę		Ę	Ę	Æ	3	¥	₽	ۇ		Ę		8		<u> </u>	
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				×	5	₩	35	8		ŧ	ğ	ğ	8	78	¥	ě	ğ	ğ	Ę	Ě		ž	6	7.	
				2	5.	5.	5	2	9	8	9		₫.	<u>\$</u>	ž	₹	Ę	<u>۾</u>	<u> </u>	Ą		충	ş	<u>چ</u>	
				- 8	8	- 8	8	8	ja B	<u> </u>	<u> </u>) B	Ĩ	ပ္ရ	Q	Š	ğ	₹	8	g		2	2	Q	
Exposure Route	Parameter	Symbol	Units	§ ₹			<u>\$</u>		<u> </u>		<u> </u>	<u></u>	<u>\$</u>	<u>*</u>	ž	: :8	<u>g</u>	8	5	<u></u> ಕ್ರ	<u></u>		8	<u>ĝ</u>	
	Inhalation Cancer Slope Factor	CSF _{leh}	kg-d/mg	4.00E-01	4 00E-01	4 00E-01 0.00E+00	4.00E-01	4.00E-01	2 73E-02	3 08E-01 0 00E+00	3 08E+00 0 00E+00	3.08E-01 7.84E-06	3 085-01	1.16E+00				5.20E-02			8 10E-02			7 70E-02	
	Risk Total cardinogenic risk for exposure route	R.	fraction fraction	0.00€+00	1.01E-06	0.005-00	1.11E-06	4.55E-05	5.71E-05	0.000-00	0.000-00	7.040-06	0.00+300.0	1.80E-04				6.30E-08			2.72E-05	0.00+300.0		1 455-06	3.01
	TOTAL COST DESCRIPTION OF THE PROPERTY OF THE		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,																						
	Average intake from inhalation non-carcinogens	<u>ا</u>	mg/kg-d	0	2.95128E-05	0	3.2464E-05	0 001328075		0	0	0.00029712	0	0 001809429	0	0	0.000753929	1 41415-05	0 934736351		0 00392043	0	0 00024348	0 00021987	0.00021
	Inhalation Reference Dose	RfD _{inh} HQ	mg/kg-d						8 57E-03 2.847092598										1 70E-02 54.98449122						
	Hazard Quotlent Total Hazard Index	Hi	mg/kg-d mg/kg-d						2.04/072376										34.70447122	4					
ncidental ingestion of creek water		C.	ug/I		1 71027E-07 1.71027E-07				0.003648704						0.000774668		0.002226 0.002226	3.4596E-05 3.4596E-05			7 0 011575497 7 0 011575497			1.27415E-06	
	POE concentration Water ingestion rate	C _w IR	mg/m3 I/di	2.772775-07	1.710276-07	1111686-07	1.00130-07	7 67621E-U6	0.003648704	1.214275-06	1.128/86-06	7 1366/6-09	5 263 IVE-UV	0.005342537	0.000//4668	0 000205232	0 002228	3.43765-03	1.33736262	0.000182537	0 0115/549/	4 889115-09	1 41097E-06	1,2/4156-06	4 00642
	Exposure frequency	ĒĒ	ďγ																						
	Exposure duration	ED	y																						
	Body weight	BW	kg																						
	Averaging time carcinogens	AT _e ATn.	d d																						
	Averaging time non-carcinogens	VII.0	•																						
	Average intake from ingestion carcinogens	6	mg/kg-d		6 96157E-15		7.65772E-15			4 942715-14					3.15325E-11				5.53403E-08			1 99009E-16	5 74329E-14		
	Ingestion Cancer Slope Factor	CSF.	kg-d/mg	4.00E-01		4 00E-01	4.00E-01	4.00E-01	5.50E-02	7.30E-01	7.30E+00		7 306-02			1 40E-02		1 30E-01		8.40E-02		7.30E+00		7. 80 E-02	
	Risk Total carcinogenic risk for exposure route	R R,	fraction fraction	4.87E-15	2.78E-15	1.81E-15	3 06E-15	1.25E-13	8.17E-12	3 615-14	3.35E-13	2.726-16	1.56E-17	2.395-10		1 17E-13	5.62E-12	1.836-13	i	6.24E-13		1 45E-15		4 05E-15	2.611
	A		mg/kg-d	1 421225-12	8 12183E-14	5 27010E.14	8 93401E-14	3.65482E-12	1 732726-09	5 7645E-19	5 34041E-13	4 33003E.16	2.50037E-15	2.5371E-09	3.67879E-10	9 74619E-11	1.0571E- 09	1 449015.11	6.45637E-07	8 66841E-11	5 49704E-09	2.32177E-15	6 70051E-13	6.05076E-13	1 90259
	Average intake from ingestion non-carcinogens ingestion Reference Dose	RfD _o	mg/kg-d	1 42 1325-13	0 121001-14	047717E-14	2.00E-05	3.054021-12	4 00E-03	3,70036-13	3 3004112-13	4.337721-13	230076-13	2.33/12-07	4.005-02			7.006-04					4 00E-03		
	Hazard Quotient	HQ	mg/kg-d				4 467E-09		4.33179E-07						9.19697E-09				3.22819E-05		5 49704E-07			3.02538E-09	
	Total Hazard Index	н	mg/kg-d																						
Dermal contact with creek water	POE concentration	C _w	ug/l	2.99297E-07	1 71027E-07	1.111685-07	1.88136-07	7 69621E-06	0.003648704	1 21429E-06	1.12878E-06	9 13887E-09	5 26519E-09	0.005342537	0 000774668	0.000205232	0 002226	3.4596E-05	1 35956262	0.000182537	7 0 011575497	4.88911E-09	1.41097E-06	1.27415E-06	4.00642
	event duration	tevent	hr																						
	absorbed dose per event	Doeven	it mg/cm2-ever events/day	1 60907E-13	7.91158E-13	5.51653E-13	1 481956-12	3.78617E-10	1.36534E-10	3.178446-12	5.06557E-12	4 16175E-14	2.36346E-14	3.17633E-11	1 55078E-10	6-52686E-11	3.7787 IE-11	1 99165E-12	1 077526-07	2.8797E-12	2 2.34503E-10	3 407445-14	5.24028E-13	6,38038E-13	3.86609
	Event frequency Exposure duration	EV ED	v																						
	Exposure frequency	EF	d/y										-												
	Skin surface area	SA	cm2																						
	Body weight	BW	kg:																						
	Averaging time	AT ATn _e	d/y d																						
	Averaging time non-carcinogens	VIIE	0																						
	Absorbed dose for carcinogens	DAD _e	mg/kg-d	9.72014E-13				2.03431E-09			2.72173E-11				8.332345-10				5.78949E-07				2.8156E-12	3 42817E-12	
	Dermal Cancer Slope Factor	C2F our	kg-d/mg	4.00E-01	4 00E-01	4 005-01	4.005-01		5.50E-02	2.35E-01	2 35E+00					1 405-02	6.20E-02	1.30E-01		8.406-02		7.30E+00		7.80E-02	
	Risk	R	fraction	3.89E-13	1 705-12	1 195-12	3 185-12	8 14E-10	4.03E-11	4 01E-12	6.40E-11	5.14E-15	9.27E-15	1.88E-10		4 915-12	1.26E-11	1.39E-12	:	1.306-12	*	1.345-12		2.67E-13	3.32
	Total carcinogenic risk for exposure route	R,	fraction																						
	Absorbed dose for non-carcinogens	DAD _{mo}	mg/kg-d	1.13402E-11	4 95937E-11	3 458036-11	9.2975BE-11			1 9924E-10	3 17535E-10	2 60879E-12	1 481545-12	1 991085-09	9 72106E-09		2.36868E-09					2.13595E-12			
	Dermal Reference Dose	RfD _{car}	mg/kg-d				2.00E-05		4 00E-03						4 005-02								4 00E-03		
	Hazard Quotient Total Hazard Index	HQ HI	mg/kg-d mg/kg-d				4.64479E-06		2.13966E-06						2.43026E-07	1.07667E-06	1 184345-07	1 783526-07	0.00108942	9.0257E-09	7.34995-06		8 21216E-09	1 99977E-07	3.02932
	IOIGI HCLASIG INGRA	- 18	ng/kg-u																						
arcinogenic risk - all routes (detect																									
arcinogenic risk - all routes (undete DTAL CARCINOGENIC RISK - ALL RC		Sum Rt	fraction	1 34E-06	5 55E-06	3.15E-06	9 45E-06	2 13E-03	8 34E-05	28E-05	1 87E-04	1 40E-05	4 665-06	2.156-04	0 00E+00	2.09E-05	8 58E-07	1 03E-07	0 00E+00	9 485-08	2.73E-05	6 62E-04	0 00E+00	2 42E-06	6 28
ion-Carcinogenic risk - all routes (de	efected organics)							· · · · · ·																	
on-Carcinogenic risk - all routes (ur DIAL NON-CARCINOGENIC HAZAR		Sim Lil	fraction				12 16192855		4,243419059			^	^	^	0.002517536	3 (195852/2	0.008077147	0.005050530	74 7111046	0.000458494	0 111956852	- n	በ በ33ስነስን፣8	0 727879063	0.59900
UIAL NUN-CAKUNUUSING HALAK	DINDEX - ALL ROUID	30/11 FU	HOUSE	U	U	v				v	v	U		·	0.002011000	3 07 303243	~ WWW, = 102	- JUJUST 337	/ 7 / 11 1700	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	V 1117 JUDG2	U	0 000010/17	0 /2/0/7000	J 2/00/33

TABLE 7-14
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

······································									a	nemicals of Pot	entral Concer	n	T	
				no[12,3-cd]Pyrene	thythapthalene	ificiene	erizerie	od-n-propykamine	achlorophenol	chloroethene	oroethene	Chloride		
Exposure Route	Parameter	Symbol	Units	ğ	Ę	Ð	₽	. ₽	Ę	Ē	-	Ī	훃	
CPONGE NOOIS	Inhalation Cancer Slape Factor	CSF _{Int}	ka-d/ma	3 08E-01						2 10E+00	4 006-01	3 00E-02	<u>-</u>	
	Rtsk	R	fraction	0.00E+00						3 136-04	1.68E-04	2.83E-07	- 1	
	Total carcinogenic risk for exposure route	R,	fraction									[8.676-84	20
	A	la			4.0400000.00	0 000585841	/ 00070F 04	0						
	Average intake from inhalation non-carcinogens inhalation Reference Dose	RfD _{inh}	mg/kg-d mg/kg-d	U	4.040771:-U3	8 57E-04	6.32978E-05 5 71E-04	U	U	0.001736614 1.40E-01	1,145-02	0 000110074		
	Innaignon kererance pose Hazard Quoffent	HQ	mg/kg-d			0 683595467					0.431002163	2.86E-02 0.003848727	ŀ	
	Total Hazard Index	HI	mg/kg-d			0 003373407	0 110034206			00012404364	0.431002163	0.0036467.27	7.648101	6
	TOTAL FIGURE A FRANCE		ng/kg-u										7-2002-01	
cidental ingestion of creek water	POE concentration	C.,	ug/l	5.26519E-09						0.000841116			j	
	POE concentration	C.	mg/m3	5.26519E-09	0.0001186	0.001433262	0.000154858	0.007212425	7.73042E-06	0.000841116	0.029336582	0.000325004	ľ	
	Water ingestion rate	IR .	Vd.											
	Exposure frequency	뜐	d/y											
	Exposure duration	ED BV4	y											
	Body weight	BW AT _e	k o d											
	Averaging time carcinogens Averaging time non-carcinogens	ATn.	d											
	Averaging time non-carcinogens	Vn.P	•										ı	
	Average intake from ingestion carcinogens	6	mg/kg-d	2 14317E-16	4.82755E-12	5.83402E-11	6.30342E-12	2.93578E-10	3.14663E-13	3.423726-11	1 194136-09	1.32291E-11	i	
	ingestion Cancer Slope Factor	CSF.	ka-d/ma	7 30E-01				7 00E+00	1,206-01	5.40E-01	4.00E-01	7 20E-01	1	
	Risk	R	fraction	1 56E-16				2.06E-09	3.786-14		4.78E-10			
	Total carcinogenic risk for exposure route	R,	traction									[3.20E-09	
	Average intake from ingestion non-carcinogens	P.	mg/kg-d	25003/6-15	5.63215E-11		7.354E-11	3.42508E-09		3.99434E-10		1.54345-10		
	Ingestion Reference Dose	RfD _e HQ	mg/kg-d		4 005-03	2.00E-02	5 00E-04 1,4708E-07		3 00E-02		3.00E-04	3.00E-03		
	Hazard Quofient Total Hazard Index	HI HI	mg/kg-d mg/kg-d		1,406046-06	3.40318E-08	1,4/066-0/		1.223696-10	3 99434E-08	4 643845-05	5 14467E-08	1.926-66	
	10.0													
ermal contact with creek water	POE concentration	C.,	ug/l	5.26519E-09	0.0001188	0.001433262	0.000154858	0.007212425	7.73042E-06	0.000841116	0.029336582	0.000325004		
	event duration	tevent	hr										1	
	absorbed dose per event	Daevent		2.49869E-14	Q	2.00333E-10	2.52675E-12	5.27912E-11	1.93543E-11	1 04633E-10	1 06659E-09	4 46083E-12	1	
	Event frequency	EV	events/day										1	
	Exposure duration	ED	y -14.											
	Exposure frequency	₽ \$A	d/y cm2											
	Skin surface area Body weight	BW	kg										ŀ	
	Averaging time	AT	q/y											
	Averaging time non-carcinogens	Aīn _e	ď										1	
		-											i	
	Absorbed dose for cardnogens	DAD _o	mg/kg-d	1.34255E-13	0	1.07639E-09	1.35762E-11					2.3968E-11	l	
	Dermal Concer Slope Factor	C2F	kg-d/mg	2.30E-01				1.80E+00	1,205-01	5.406-01	6.00E-02		l	
	Risk	R	traction	3 095-14				5.116-10	1.256-11	3.045-10	3.445-10	1.73E-11	I	
	Total carcinogenic risk for exposure route	R,	traction										8.516-09	
	Absorbed dose for non-carcinogens	DAD	mg/kg-d	1 5663E-12	٥	\.25579E-08	1,58389E-10	3.309215-09	1 213225-09	6 558945-09	6.68592E-08	2.79627E-10		
	Dermal Reference Dose	RfD _{oter}	mg/kg-d		4.00E-03		5 00E-04		3 00E-02		4.50E-05	3.00E-03	1	
	Hazard Quotient	HQ	mg/kg-d			6.27894E-07			4 04408E-08		0.001485759			
	Total Hazard Index	н	mg/kg-d										2.84503	
rcinogenic risk - all routes (detecte rcinogenic risk - all routes (undete													3 35E-03 1 03E-03	
AL CARCINOGENIC RISK - ALL RO		Sum Rt	traction	1 70E-05	0 00E+00	0 00E+00	0 00E+00	2 93E-04	3 45E-05	3.38E-04	2 03E-04	171E-06	4.39E-03	
n-Carcinogenic risk - all routes (de													1 09E+02	
n-Carcinogenic risk - all routes (un	detected organics)												1 38E+01	
TAL NON-CARCINOGENIC HAZARE	NINEY ALL DOUBLES	Sum HI	fraction		A AAA IAAA I	0 693306348	TARRETTA TO			0 066871694			1 23E+02	

TABLE 7-15
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

										-						Chemicals	of Potential Co	oncern						
Source Medium	Exposure Medium	Esposure Point	Esposure Route	Porameter	Symbol	Units	Non Conforminant- Specific Parameters	1,1,2,2-1etrachloroethane	1,1 2-Trichtonoethane	1,1-Dichloroethane	Total 1.2 Oktharoethene	1,2,4 Inchloroberzene	1,2-Dichloroethane	1,2-Dichloropropane	1 3-Dichlorobenzene	1,4-Dichlorobenzene	2.4 6-Trichtorophenol	2.4-Dinitrotoluene	2.6-Dinitrotoluene	2-Chlorophenol	3 3-Dichkroberzidine	4,6-Dhilto-2-Methyl Phenol	Arocker-1016	
											·													
Groundwater	At	indoor air	Vapour intrusion - Inhalation	POE concentration POE concentration Inhalation rate Exposure fine Exposure frequency Exposure duration Body weight Averaging time concinogens Averaging time non-carcinogens	Coh Coh IR ET ET BW ATo ATo	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25,550 2.190	7.59E-06 7.59E-09	9.306-05 9.306-08	2.27E-03 2.27E-06	7,42E-03 7 42E-06	4.07E-03 4.07E-06	1 925-04 1 925-07	1.06E-04 1.06E-07	8.90E-03 8.90E-06	6.16E-06	0 00E+00 0 00E+00	0.00E+00	0.00E+00 0.00E+00	3.06E-04 3.06E-07	0.00E+00 0 00E+00	0.00E+00 0 00E+00		0.00E
				Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	io CSF _{INI} R R ₁	mg/kg-d kg-d/mg fraction fraction		4 19218E-10 2.03E-01 8.51E-11	5 13666E-09 5.70E-02 2.93E-10	1.25379E-07	4 09828E-07	2.25902E-07	9.10E-02 9.65E-10	5.85468E-09	4,91573E-07	3 40235E-07 2 20E-02 7 49E-09	0 1 09E-02 0.00E+00	0	0	1 69013E-08	ō	0	3.733745-12 4.005-01 1 496-12	4.00E
				Average intake from inhalation non-carcinogens Inhalation Reference Dose Hazard Quotient Total Hazard Index	RfD _{ee} , HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4.89087E-09	5.99277E-08	1.46275E-06	4.78133E-06	2.63553E-06 1 14E-03 0.002311867	1.40E-03	6.83047E-08 3 14E-03 5.99164E-05	5 73501E-06	3 9694E-06 2.30E-01 1 72583E-05	0	0	0	1.971815-07	0	0	4.35603E-11	
	Groundwater	Tap Water	ingestion of tap water	POE concentration POE concentration Water Ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., RR EF ED BW AT,, ATn,	ug/l mg/m3 l/d d/y y kg d d	1 350 6 15 25,550 2.190	0 049115 0.049115	0 15444 0 15444	6.479 6.479	10.97 10.97	60.52 60.52	0.27144 0.27144	0.14508 0.14508	43.99 43.99	49 62 49.62	0 10241 0.10241	1.10916 1 10916	0.1411 0.1411	1.881 1.881	0.157795 0 157795			0.132 0 132
				Average Intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	CSF. R R ₁	mg/kg-d kg-d/mg fraction fraction		2.69123E-07 2.00E-01 5.38E-08	8 46247E-07 5 70E-02 4.82E-08	3.55014E-05	6.01096E-05	0.000331616	1.48734E-06 9 10E-02 1.35E-07	7.94959E-07 6.80E-02 5.41E-08	0 000241041	0.00027189 2.406-02 6.536-06	5.61151E-07 1 10E-02 6 17E-09	6.07759E-06 6.80E-01 4 13E-06	7.73151E-07 6.70E+00 5 18E-06	1.03068E-05	8.6463E-07 4.50E-01 3.89E-07	5.5542 5E- 07	1.25479E-06 4.00E-01 5.02E-07	7.277816 4 006 2.916
				Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	L RFD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	·	6.005-02	4.00E-03		1 00E-02	1,00E-02	2.00E-02	9.27452E-06 1.10E-03 0.008431382	3 00E-02	0 003172055 3 00E-02 0 10573516	1 005-04	7 09052E-05 2.00E-03 0 035452603	1 QOE-03	5 00E-03	1.008745-05	6.47995E-06 1 00E-04 0.064799543		8.49078E
			Dermal contact with tap water	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sidn surface area Body weight Averaging time Averaging time non-carchogens	C _w tevent Dosever EV ED EF SA BW AT AIn ₆	ug/l hr mg/cm2-eve events/day y d/y cm2 kg d/y d/y	nt 1 6 350 6.600 15 25.550 2.190	0.049}15 9 08634E-10	0.15444 2.12216E-09	6.479 7.68822E-08	10 97 1 47042E-07	60.52 1 16844E-05	0.27144 2.00651E-09	0.14508 2.10687E-09	43.99 5.93365E-06	49 62 4 85357E-06	0.10241 1 14437E-08	1 10916 1.00576E-08	0 1411 0	1,881 3.10776E-08	0 157795 9.3442E-09	0 101365 1.01879E-09	0 229 0	0.13 5.676781
				Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{der} R R ₊	mg/kg-d kg-d/mg fraction fraction		3 28602E-08 2.00E-01 6.57E-09	7.67467E-08 5 70E-02 4.37E-09		5.31769E-06	0.000422559	7 25641E-08 9.10E-02 6.60E-09	7,61936E-08 6 80E-02 5.18E-09	0.000214587	0.000175526 2 40E-02 4.21E-06	1 10E-02	3.63728E-07 8.00E-01 2.91E-07	0 6.70E+00 0.00E+00	1 12395-06	3.37927E-07 4 50E-01 1.52E-07	3.68439E-08	0 4.005-01 0 00E+00	2.052978 4.008 8.218
				Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6 00E-02	8 95378E-07 4.00E-03 0.000223845	1.00E-01	1.00E-02		2.00E-02	8.88925E-07 1 10E-03 0.000808114	3.00E-02	3 00E-02	1 00E-04	2.00E-03	1 00E-03		3.94248E-06	4.29846E-07 1.00E-04 0.00429846	7 00E-05	2.395138
ly calculated fi	Air or COPC with Henry	indoor Air s Law > 1e-5 atm.m3/	Vapors from tap water irnol, those with a "Y")	Concentration in top water Concentration in top water Volatilization factor POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens	C VF C RET EF ED BW AI.	ug/l mg/m3 dimensionies mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25.550			6.479 y	10.97 10.97 0.005485	60 52 60 52 7 0 03026	0 27144 7	0.14508 0.14508 9 0.00007254	43.99 43.99 7 6.021995	49 62 49 62 0 02481		1 10916 1 10916 0	0 1411 0 1411 0 1	1.881 1.881 Y 0.0009405	0 157795 0 157795 0		0.229 Y	0.13 0 13
				Averaging time non-carcinogens Average intake from inhalation carcinogens	Aīn _e	d mg/kg-d	2,190	1.35638E-06	4.26508E-06	0.000178927	0 000302952	0 001671347	7.49621E-06	4 00659E-06	0 001214847	9.001370328	o	0	o	5 19465E-05	0	0	6 32416E-06	

TABLE 7-15
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

																								MISSOURI ELL	SIRK HURKS
		<u> </u>														Cl	remicals of Pol	ential Concer	n						
Exposure Route	Parameter	Symbol	Unrits	Araclar-1232	Arocker-1242	Aroclor-1248	Aroclar-1254	Aroctor-1260 (Filtered)	Bergane	Benzo(a) anthracene	Benzo(a) pyrene	Benzo[b]fluoranithene	Benzo(k)fluoranthene	bs(2-Chloroethyl) Ether	bk(2-Chlarokopropy), Elhe	Bis (2-eithythexyl phithodote)	Bromodichioromethane	Carbon Tetrachloride	Chloroberzene	Chlarodibromomethane	Chloratom	Dibenzo(a h) Antitracene	Diberzofuran	Hexachioro-1 3-Butadiene	Hexachloroberzene
																						-			
Vapour intrusion - inhalation	POE concentration POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Com Com R ET ED BW ATo ATo	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00++00 0.00++00	3.485-06 3.485-11	0 00E+00 0 00E+60	5 00E-08 5 00E-11	2.085-06 2.085-09	2.17E-03 2.17E-06	0.00E+00 0.00E+00	0,00E+00 0.00E+00	5.21E-08 5.21E-11	0.00E+00 0.00E+00	4.115-04 4.115-07	0.00E+00 0.00E+00		1.20E-03 1.20E-06	3.04E-08	1 525-00 1 525-03	9.87E-05 9.87E-08	1.13E-02 1.13E-05	0.00E+00 0.00E+00		7.486-07 7.486-10	
	Average Intake from inhalation carchagens inhalation Cancer Slope Factor Risk Total carchagenic risk for exposure route	lo CSF _{inh} R R,	mg/kg-d kg-d/mg traction fraction	0 4,00E-01 0,00E+00	1,9221E-12 4.00E-01 7.69E-13	0 4.00E-03 0.00E+00	2.76164E-12 4.00E-01 1,10E-12	1 14884E-10 4.00E-01 4.60E-11	1 19855E-07 2.73E-02 3.27E-09	0 3.06E-01 0 00E+00	0 0.00##00 0.00##00	2.87763E-12 3 08E-01 8.86E-13	0 3 08E-01 0.00 E+ 00	2.27007E-08 1 16E+00 2.63E-08	0	0	6.62795E-08	1.67908E-09 5.20E-02 8 73E-11	8.39546-05	5.45148E-09	6 24132E-07 8.10E-02 5.06E-08	0 3.08E-01 0.00E+00	1. 795 07E-08	4 131425-11 7.705-02 3 185-12	1 61E+00
	Average intake from inhalation non-carchogens inhalation Reference Dose Hazard Quotient Total Hazard index	l _a RfD _{inh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2 242455-11	0	3.22192E-11	1.34032£-09	1 39831E-06 8.57E-03 0.000163164	0	0	3 357245-11	0	2.648425-07	0	0	7 73266-07	1 9.5893E-08	0 000979463 1 70E-02 0.057615471	6.36007E-08	7 28153E-06	٥	2.09425E-07	4.819995-10	7.7326E-10
Ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C" R EF ED BW AT. ATn.	ug/f mg/m3 t/d d/y y kg d d	0.1603 0.1603	0.0916 0.0916	0.05954 0.05954	0 19076 0 10076	4 122 4,122	75.73 75.73	0 65036 0 65036	0.60456 0.60456	0.922185 0.922185	0.5313 0.5313	5.416 5.616	0.81432 0.81432		234 234	0 04389 0 D4389	2901.18 2901 18	0.19188 0 19188	12.168 12.168	0 49335 0.49335	0 7857 0 7557	0.68242 0.68242	
	Average intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	i, CSF。 R R,	mg/kg-d kg-d/mg fraction fraction	8.78356E-07 4.00E-01 3.51E-07	5.01918E-07 4 00E-01 2.01E-07	3.26247E-07 4.00E-01 1.30E-07	5.5211E-07 4 00E-01 2 21E-07	2.25863E-05 4 00E-01 9.03E-06	0.000414959 5.50E-02 2.28E-05	3.56362E-06 7 30E-01 2.60E-06	3.31266E-06 7 30E+00 2.42E-05	\$ 05307E-06 7.30E-01 3.69E-06	2.911236-06 7.30E-02 2.13E-07	3.07726E-05 1 10E+00 3 38E-05	4 46203E-06	0.000602301 1 406-02 8 436-06	1,28219E-05 6,20E-02 7,95E-07	2.40493E-07 1.30E-01 3.13E-08	0 015896877	1.0514E-06 8 40E-02 8.83E-08	6 6674E-05	2.70329E-06 7.30E+00 1.97E-05	4.14082E-06	3.73929E-06 7.80E-02 2.92E-07	1 60E+00
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotlent Total Hazard Index	l, RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.02475E-05	5.85571E-06		6.44128E-06 2.00E-05 0.322063927	0.000243507	0.004841187 4.00E-03 1.210296804	4.15755E-05	3.864775-05	5 B9525E-05	3.39644E-05		5.2057E-05 4 00E-02 0 001301425	2 00E-02	0.000149589 2 00E-02 0.007479452	7 00E-04	0.185463562 2.00E-02 9.273178082	2.00E-02	1.00E-02	3.15384E-05	4.00E-03	4,3625E-05 2,00E-04 0,218125114	8.00E-04
Dermal contact with tap water	POE concentration event duration event duration absorbed dase per event Event frequency Exposure duration Exposure frequency Stan surface area Body weight Averaging time Averaging time non-carcinogens	C _w tevent Doewer EV ED EF SA BW AT ATn _c	ug/i hr mg/cm2-ever events/day y d/y cm2 kg d/y d/y d	0 1403 4.85129E-08	0.9916 2.99626E-07	0.05954 2.08921E-07	0 10076 5.6124E-07	4.122 0 000143389	75.73 1 76209E-06	0 65036 1.20373E-06	0.60456 1.91842E-06	0.922185 2 96952E-06	0.5313 1 6864E-06	5.616 2.26685E-08	0.81452 1.1527E-07	109.92 2.47184E-05	2.34 2.80879E-08	0.04389 1.7439E-09	2901.18 0.000152749	0.19188 2.14049E-09	12.168 1.6194E-07	0.49335 2.4313E-06	0.7557 1.98459E-07	0.68242 2.41637E-07	
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{our} R R _t	mg/kg-d kg-d/mg fraction fraction	2.47773E-06 4.00E-01 9.91E-07	1 08358E-05 4,00E-01 4,33E-06	7.5555E-06 4.00E-01 3 02E-06	2 02969E-05 4 00E-01 8 12E-06	0.00518558 4.00E-01 2.07E-03	6.37248E-05 5.50E-02 3.50E-06	4.35323E-05 2.35E-01 1.02E-05	6 93786E-05 2 35E+00 1 63E-04	0 000107391 2 30E-02 2.47E-06	6.09875E-05 7 30E-02 4.45E-06	8.19794E-07 1 10E+00 9.02E-07	4.16866E-06	0 000893926 1 40E-02 1.25E-05		6.30671E-08 1.30E-01 8.20E-09	0 005524088	7.74093E-08 8.40E-02 6.50E-09	5 85645E-O6	8 79266E-05 7.30E+00 6.42E-04	7 17714E-06	8.73864E-06 7.80E-02 6.82E-07	1 60E+00
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.89068E-05	0.000126418	8.81475E-O5	0 000236797 2.00E-05 11.83985998	0.060498432	0 000743456 4 00E-03 0.185863921	0.000507877	0.000809417	0.001252895	0.00071152	9.56426E-06	4 00E-02	3 80E-03	2 00E-02	7 35782E-07 7 00E-04 0.001051118	6 20E-03	2 00E-02	2.00E-03	0.00102581	4 00E-03	0 000101951 2 006-04 0 509753746	8 00E-04
Vapors from Iap water not, those with a 'Y')	Concentration in tap water Concentration in tap water Volatilization factor POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens	Cw VF CoApp IR ET EF ED BW ATG	ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d	0 1603 0 1603 0	0.0916 0 0916 / 0 0000458	0.05954 Y	0 10076 0 10076 10,00005038	4 122 4.122 7 0.002041	75.73 75.73 / 0.037865	0.65036 0 65036 0	0.60456 0.60456 0	0 922185 0.922185 y 0.000461093	0.5313 0.5313 0	5.616 5.616 0.002808	0 81432 0.81432 0		2.34 2.34 7 0.00117	0 04389 0.04389 0.000021945	2901,18 2901.18 7 1 45059	0.19188 0 19188 7 0.00009594	T2 168 12.168 7 0.004084	0 49335 0.49335 0	0.7657 0.7557 9 0.00037785	0.68242 0.68242 0.00034121	0 67784 Y
	Averaging itme non-carcinogens Average intake from inhalation carcinogens	Aīn _o	d mg/kg-d	o	2 52967E-06	0	2.78263E-06	0 0001 13835	0 002091393	0	o	2.54675E-05	0	0 000155094	0	0	6.46225E-05	1.212096-06	0 080120259	5,29904E-06	0.000336037	0	2.08697E-05	1.8846E-05	1.871955-05

TABLE 7-15
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

												MLE	ISOURI ELECTRIC	. H
									Ch	emicals of Pot	ential Concer	1		_
Exposure Route	Parameter	Symbool	Units	Indeno(1,2,3-cd)Pyrene	2-methy/mapthatene	Naphthalene	Ninobergene	Nitroscof-n-propykanine	Pentachlorophenol	Tefrachloroethene	Trichloroeffrene	Vinyl Chloride	Total	
											-			_
Vapour intrusion - inhalation	POE concentration POE concentration inhalation rate Exposure firme Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Co-h Co-h IR ET ED BW ATa ATno	ug/m3 mg/m3 m3/hr h/d d/y y kg d d	0.00E+00 0.00E+00	2.19E-08 2.19E-08	2.75E-04 2.75E-07	6.87E-06 6.87E-09	0.00E+00 0.00E+00	0.00E+00 0.00E+00	1.31E-03 1.31E-06	2.50E-02 2.50E-05	9.36E-04 9.36E-07	į	
	Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _{trib} R R ₁	mg/kg-d kg-d/mg fraction fraction	0 3.08E-01 0.00E+00	1.2096E-09	1.5189E-08	3.7945E-10	0	0	7.23551E-08 2.10E+00 1.52E-07	2.006-02 2.76E-08	5.1698E-08 3.00E-02 1 55E-09	1986	
	Average Intake from Inhalation non-carcinogens Inhalation Reference Dose Hazard Quotient Total Hazard Index	RfD _{inh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	1 4112E-08	1.77205E-07 8.57E-04 0.000206774	4.42692E-09 5 71E-04 7.75292E-06	0		8.44142E-07 1.40E-01 6.02959E-06	1.61096E-05 1 14E-02 0 001413122	6.03143E-07 2.86E-02 2.10889E-05	6.8949	
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw IR EF ED BW ATa ATa	ug/I mg/m3 I/d d/y y kg d	0.5313 0.5313	0 1505 0 1505	1.8183 1.8183	0 19646 0 19646	7.5816 7.5816	4 14032 4 14032	5.39 5.39	15.25 15 25	0.34164 0.34164		
	Average Intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l, CSF, R R,	mg/kg-d kg-d/mg fraction fraction	2.91123E-06 7.30E-01 2.13E-06	8.24658E-07	9 96329E-06	1.07649E-06	4 1543E-05 7 00E+00 2 91E-04	2.26867E-05 1.20E-01 2.72E-06	2.95342E-05 5.40E-01 1.59E-05	8.35616E-05 2.00E-02 1 67E-06	0.000001872 7 206-01 1 356-06	17 8 \$-	
	Average intake from ingestion non-carchagens ingestion Reference Dose Hazard Quotient Total Hazard Index	L RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	3.396445-05	9.621E-06 4 00E-03 0 002405251	0.000116238 2.006-02 0.005811918	1.25591E-05 5.00E-04 0.025118174	0.000484668	3.006-02	0.000344566 1.00E-02 0.034456621	0 000974886 3.00E-04 3.249619482	0.00002184 3 00E-03 0 00728	1391-0	
ermal contact with tap water	POE concentration event duration obsorbed dose per event Event frequency Exposure duration Exposure frequency Sich surface area Body weight Averaging time Averaging time non-carcinogens	C.,, tevent Doewent EV ED EF SA BW AT ATn.,	ug/I hr mg/cm2-ever events/day y d/y cm2 kg d/y d	0.5313 1.78289E-06	0 1505 0	1.8183 1.74988E-07	0.19646 2.11446E-09	7.5816 3.69993E-08	4 14032 7.32983E-06	5.39 4.74126-07	15.25 3 73936E-07	0.34164 2.80865E-09		
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{eer} R R _t	mg/kg-d kg-d/mg traction traction	6 4477E-05 2.30E-01 1.48E-05	0	6.328336-06	7 64683E-08	1.33806E-06 1 80E+00 2.41E-06	0.000245079 1.20E-01 3.18E-05	1.71463E-05 5 40E-01 9.26E-06	1.35232E-05 3 00E-03 4.06E-08	1.01573E-07 7 20E-01 7.31E-08	3.625.60	
	Absorbed dase for non-carcinogens Dermal Reference Dose Hazard Quoffent Total Hazard Index	DAD _{ec} RfD _{che} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0.000752231	4 00E-03	7.38305E-05 2.00E-02 0.003691527	8.9213E-07 5.00E-04 0.00178426	1.56107E-05	0 003092585 3.006-02 0 103086176	1.00E-02	0 00015777 4 50E-05 3 506007297	1.18502E-06 3.00E-03 0.000395006	3.03E+01	
Vapars from tap water	Concentration in top water Concentration in top water Volatilization factor	ر د د	ug/l mg/m3 climensionless	0.5313 0.5313 0		Y	0.19646 0 19646 y	7 5816 7 5816 0	4 14032 4 14032 0	5.39 5.39 y 0.002695	15.25 15.25 y 0.007625	0.34164 0.34164 9 0.00017082		
iose with a 'Y'j	POE concentration inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Co-tage IR ET ED BW ATc ATn _e	mg/m3 m3/hr h/d d/y y kg d d	U		0.00090915		Ū	Ū	VARLEGTS	V 907 023	0.00017002		
	Average intake from inhalation carcinogens	l _e	mg/kg-d	0	4 15627E-06	5.0215E-05	5.42553E-06	0	0	0.000148853	0.000421151	9 43488E-06	i	

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TABLE 7-15
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

															Chemicali	of Potential C	oncern				_		
e Medium Exposure Medium	Esposure Point	Exposure Route	Parameter Inhalation Cancer Stope Factor	Symbol CSF _{bin}		Non ontaminant- Specific Parameters	S P P C C C C C C C C C C C C C C C C C	20.00 00	1,1-Dichlaroethane	Total 1.2 Dichlaroethene	1,2.4 Trichlorobenzene	201.9 3.2-Dichloroethome	1.2-Dichloropropane	1 3-Dichlorobenzene	2.20E.02	S 24.6-Trichtorophenal	2.4-Dinitrotoluene	2.6-Dinitrotokene	2-Chlorophenol	3,3-Dichloroberzidine	4 6-Dinitro-2-Methyl Phenol	10-300+ Aracio-1016	40
			Risk	R R	fraction		2.75E-07	2.435-07				6.82E-07			3.01E-05	0 00 E+ 00						2.53E-06	0.0
			Total carcinogenic risk for exposure route	14	fraction																		
			Average intake from inhalation non-carcinogens inhalation Reference Dose	l _a RfD _{mb}	mg/kg-d mg/kg-d		1 58244E-05	4 97593E-05	0 002087481	0 003534444	0 019499047 1 14E-03	8.74557E-05 1 40E-03	4 67436E-05 1 14E-03	0.014173216	0.015987156 2.30E-01	0	D	Đ	0 000606043	0	0	7.37819E-05	
			Hozard Quotient	HQ	mg/kg-d								0.041003143		0.069509375								
			Total Hazard Index	HI	mg/kg-d						11 12112002		0.071000140		0.20700707								
Surface Water	Creek	Incidental ingestion of creek water	POE concentration	C _w	υ <u>α</u> /l		3.87145E-05	0.00014692	0.005107025	0.168484251	0.003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.07239E-0-5	0.001055151	0.0001112	0.001482685	0.000124391	7.99002E-05	4.2765-07	2 4701
55,1355 113,13			POE concentration	c.	mg/m3		3.87145E-05				0.003415705								0.001482685		7 99002E-05	.,	
			Water Ingestion rate	IR .	Vď	0.05																	,
			Exposure frequency	EF	d/y	52																	
			Exposure duration	ED BW	y	15																	
			Body weight Averaging time carcinogens	AT,	kg d	25,550																	
			Averaging firme non-carcinogens	ATn _o	d	2,190																	
			Average Intake from Ingestion carcinogens	L	mg/kg-di		1.57586E-12	5.9803F-12	2.07879F-10	6.85807F-09	1.39035E-10	1.05108E-11	5.61785F-12	1.128495-08	1.354465-08	3.28583F-12	4.294945-11	4 524345-12	4 M3519E-11	5.06286E-12	3 25235.12	1.740526-14	1 009
			Ingestion Cancer Slope Factor	CSF.	ka-d/ma		2.00E-01	5.70E-02				9 106-02			2.40E-02	1 105-02	6.80E-01		W00017E-11	4 506-01	U-2-12-12	4.00E-01	4
			Risk	R	fraction		3 15E-13	3.41E-13				9.56E-13	3.826-13		3.25E-10	3.615-14				2.28E-12		6.96E-15	
			Total carcinogenic risk for exposure route	R,	fraction																		
			Average intake from ingestion non-carcinogens	L.	mg/kg-d		1 8385E-11		2.42525E-09								5.010765-10		7.04106E-10	5.90667E-11	3.79435E-11	2.03061E-13	1 177
			Ingestion Reference Dose	RfD _o	mg/kg-d		6 00E-02	4 00E-03				2.005-02				1.00E-04	2.00E-03		5.00E-03		1.00E-04		
			Hazard Quotient Total Hazard Index	HQ H	mg/kg-d mg/kg-d		3 064165-10	1,74425E-08	2.42525E-08	8.0010BE-06	1 62207E-07	6.13131E-09	5.95833E-08	4 38857E-06	5.26733E-06	3.83347E-07	2.50538E-07	5.280736-08	1.40821E-07		3 79435E-07	2.90087E-09	
		Dermal contact with creek water	POE concentration	C.,	ug/t		3.871456-05	0.00014692	0.005107025	0 168484251	0.003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.07239E-05	0.001055151	0.0001112	0.001482685	0.000124381	7.99002E-05	4,2765-07	247
			event duration	levent	hr	2													J.507.102555				_ ***
			absorbed dose per event	Daeven	nt mg/cm2-event		1 012 8 9E-12	2.99941E-12	9.41817E-11	3.52119E-09	9.32615E-10	2.97547E-12	3 08949E-12	5.39677E-08	4.70013E-08	1.27568E-11	1.3531E-11	0	3 66143E-11	1.04164E-11	1.13569E-12	0	1 49
			Event frequency	EV ED	events/day	,																	
			Exposure duration Exposure frequency	EF	d/v	52																	
			Skin surface area	ŠA	cm2	6,600																	
			Body weight	BW	kg	15																	
			Averaging time	AT	d/y	25,550																	
			Averaging time non-carcinogens	ATn _o	d	2,190																	
			Absorbed close for carcinogens	DAD.	mg/kg-d		5.44227E-12		5.06038E-10	1.89193E-08	5.01093E-09			2.89968E-07	2.52537E-07		7.27022E-11	-	1 96728E-10	5.59672E-11	6.10206E-12		
			Dermal Concer Slope Factor	CSF _{der}	kg-d/mg		2.00E-01	5 70E-02				9 10E-02			2.40E-02	1 105-02				4 50E-01		4.00E-01	
			Risk Total carcinogenic risk for exposure route	R R	fraction fraction		1.095-12	9 195-13				1.456-12	1 13E-12		6.06E- 0 9	7.54E-13	5.826-11	0 00E+00		2.52E-11		0.00+300.0	3.
			loid carcingent like of exposure loole							2.202022	5.84609E-08	1.86517E-10	1.09//20010	3 3050/6 6 :	2.94627E-06	7 00/2/E · ·	B.48192E-10	_					
			- ·	DAD			2 9 40 9 SC 11	1 005105 10				1.8631/E-10	(Y3665E-10	3.38296E-06	4.740Z/E-U6	/ YY0201-10							
			Absorbed dose for non-carcinogens	DAD _{eo}	mg/kg-d		6.34932E-11							9.005.00				_	2.29516E-09	6.52951E-10	7 11907E-11		9 396
			Absorbed dose for non-carcinogers Dermal Reference Dose	RfD _{der}	mg/kg-d		6 00E-02	4 00E-03	1 00E-01	1 005-02	1 006-02	2.00E-02	1 10E-03		3.00E-02	1.00E-04	2.00E-03	1.006-03	5.00E-03	6.52951E-10	1 00E-04		9 396
			Absorbed dose for non-carcinogens					4 00E-03	1 00E-01	1 005-02		2.00E-02	1 10E-03	3.00E-02 0.000112765	3.00E-02		2.00E-03	1.006-03		6.52951E-10			9 39
		Carcinogenic risk - all routes (detect	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index ed organics)	RfD _{der} HQ	mg/kg-d mg/kg-d		6 00E-02	4 00E-03	1 00E-01	1 005-02	1 006-02	2.00E-02	1 10E-03		3.00E-02	1.00E-04	2.00E-03	1.006-03	5.00E-03	6.529516-10	1 00E-04		9 39
		Carcinogenic risk - all routes (undete	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index ed organics) Index organics	RfD _{dar} HQ HI	mg/kg-d mg/kg-d mg/kg-d		6 00E-02 1 05822E-09	4 00E-03 4.70044E-08	1 00E-01 5 90377E-08	1 008-02 2.20725E-05	1 00E-02 5.84609E-06	2.00E-02 9.32587E-09	1 10E-03 1.76059E-07	0.000112765	3.00E-02 9.8209E-05	1.00E-04 7.99656E-06	2.00E-03 4.24096E-07	1.00E-03 0	5.00E-03 4 59033E-07		1 00E-04 7.11907E-07	7 00E-05 0	
		Carcinogenic risk - all routes (undete TOTAL CARCINOGENIC RISK - ALL RO	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index ed organics) sched arganics) UTS	RfD _{dar} HQ HI	mg/kg-d mg/kg-d		6 00E-02	4 00E-03	1 00E-01 5 90377E-08	1 008-02 2.20725E-05	1 00E-02 5.84609E-06	2.00E-02 9.32587E-09	1 10E-03 1.76059E-07		3.00E-02 9.8209E-05	1.00E-04	2.00E-03 4.24096E-07	1.00E-03 0	5.00E-03 4 59033E-07		1 00E-04	7 00E-05 0	9 396
		Carcinogenic risk - all routes (undete	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index ed organics) icted arganics) UTES interted arganics) idefected organics)	RfD _{dar} HQ HI	mg/kg-d mg/kg-d mg/kg-d		6 00E-02 1 05822E-09 3.36E-07	4.70044E-08 2.96E-07	1 00E-01 5 90377E-08 0 00E+00	1 005-02 2.20725E-05 0 00E+00	1 00E-02 5.84609E-06	2.00E-02 9.32587E-09 8.25E-07	1 10E-03 1.76059E-07 5.92E-08	0.000112765 0.00E+00	3.00E-02 9.8209E-05 4.09E-03	1.00E-04 7.99656E-06	2.00E-03 4.24076E-07	1.00E-Q3 0	5.00E-03 4 59033E-07	5.415-07	1 00E-04 7.11907E-07	7 00E-05 0	

Notes:
1- ug/l = micrograms per Liter
2- ug/m3 = micrograms per cubic meter
3- h/d = hours per day
4 Vd = liten per day

9 hs - hour

10-mg/kg-d = milligrams per kllogram per day

11-kg-d/mg = tilograms per day per milligram

12-cm2 = square certimeter

13-m3/hr = cubic meter per hour

14-mg/m3 - milligrams per cubic meter

15-mg/cm2-event = milligrams per square certimeter per event

16-mg/cm3-event = milligrams per cubic certimeter per event

TABLE 7-15
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

																Ċ C	emicals of Pol	ential Concer	m						
	Parameter Inhalation Cancer Slope Factor Risk	Symbol CSF _{bh}	Units kg-d/mg fraction	400E-01	A00E01242	4.00E-010	4.006-01 10-300.4	50 (Filtered)	2.73E-02 5.71E-05	3.08E-01	3.08E+00	3 08E-01 7.84E-06	3 08E-01 0.005+00	00+33/1 Ether 00+33/1 F	bs(2-Chlarobopropy/) Ethe	Bs (2-ethythexyl phthodale)	Bromodichloromethane	2205 22 22 20 20 Tehachloride		Chlorodbronomethane	8.10E-02 2.72E-05		Disenzoturan	7 70E-06 1 45E-06	
	task Total carcinogenic risk for exposure route Average Intake from inhalation non-carcinogens	R,	traction traction mg/kg-d		2.951286-05			0 001329075		0	0	0.00029712		0.001809429	0	0	0.000753929		0 934736351	6.18222E-05			0.00024348		
	Inhaiation Reference Dose Hazard Quotient Total Hazard Index	RfD _m n HQ HI	mg/kg-d mg/kg-d mg/kg-d						8 57E-03 2.847092598				_		-				1 706-02 54 98449122		, ===				
ncidental ingestion of creek water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C IR EF ED BW AT.,	ug/I mg/m3 Vd d/y y kg d	2.99297E-07 2.99297E-07				7 69621E-06 7.69621E-06		1.21429E-06 1.21429E-06	1,12878E-06 1,12878E-06	9 13887E-09 9.13887E-09		0.005342537 0.005342537			0.002226 0.002226	3.4596E-05 3.4596E-05			0 011575497 0.011575497			1.27415E-06 1.27415E-06	
	Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for expasure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction	1.218275-14 4.005-01 4.875-15	6 96157E-15 4.00E-01 2 78E-15	4,52502E-15 4 00E-01 1,81E-15	7 65772E-15 4 00E-01 3 06E-15	3.1327E-13 4 00E-01 1.25E-13	1.48519E-10 5.50E-02 8.17E-12	4 94271E-14 7.30E-01 3 61E-14	4.594635-14 7 306+00 3.356-13	3.71993E-16 7.30E-01 2.72E-16	2 14317E-16 7.30E-02 1 56E-17	2.17465E-10 1 10E+00 2.39E-10	3.15325E-11	8.353886-12 1 406-02 1 176-13	9.06082E-11 6 20E-02 5.62E-12	1.40821E-12 1.30E-01 1.83E-13	5.53403E-08	7.43006E-12 8.40E-02 6 24E-13	4 71175E-10	1 99009E-16 7.30E+00 1.45E-15	5 74329E-14	5.18637E-14 7.80E-02 4.05E-15	1 60
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quofient Total Hazard Index	l, RfD, HQ Hi	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.421325-13	8 12183E-14	5.27919E-14	8 93401E-14 2 00E-05 4 467E-09	3.65482E-12	1.73272E-09 4 00E-03 4.33179E-07	5.7665E-13	5 36041E-13	4.339926-15	2.50037E-15	2.5371E-09	3.67879E-10 4.00E-02 9 19697E-09	2.00E-02	1 0571E-09 2.00E-02 5.28548E-08	7.00E-04	6.45637E-07 2.00E-02 3.22819E-05		5.49704E-09 1 00E-02 5 49704E-07	2.321776-15	4 006-03	6.05076E-13 2.00E-04 3.02538E-09	8.00
Dermal contact with creek water	POE concentration event duration absorbed dose per event	C _w tevent Doeven	ug/l hr	2.99297E-07		1.11168E-07 5.51653E-13	1.8813E-07		0.003648704 1.36534E-10			9.13887E-09 4.16175E-14		0.005342537 3.17633E-11			0 002226 3.77871E-11	3.4596E-05			0.011575497 2.34503E-10			1,27415E-06	
	Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	EV ED EF SA BW AT ATn _o	events/day y d/y cm2 kg d/y d	·· - · -		- -					<i></i>	. —						· -							
	Absorbed dose for carcinogens Demnal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{der} R R	mg/kg-d kg-d/mg fraction fraction	9.72014E-13 4.00E-01 3.89E-13	4.25089E-12 4.00E-01 1 70E-12	2.96403E-12 4.00E-01 1.19E-12	7.96249E-12 4.00E-01 3.18E-12	4 00E-01	7.33597E-10 5.50E-02 4.03E-11	1 70778E-11 2.35E-01 4.01E-12	2.72173E-11 2.35E+00 6.40E-11	2.23611E-13 2.30E-02 5 14E-15	1 26989E-13 7.30E-02 9.27E-15	1 10E+00	8.33234E-10	3.50688E-10 1 40E-02 4.91E-12	2.0303E-10 6.20E-02 1.26E-11	1 07011E-11 1.30E-01 1.39E-12	5.789496-07	1.54726E-11 8.40E-02 1.30E-12		1.83082E-13 7.30E+00 1.34E-12	2.8156E-12	3.42817E-12 7 80E-02 2.67E-13	1 60
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazzard Quofient Total Hazzard Index	DAD _{rec} RfD _{cher} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 13402E-11	4 95937E-11	3,45803E-11	9.28958E-11 2.008-05 4 64479E-06	2.373365-08	8 55864E-09 4 00E-03 2.13966E-06	1 99245-10	3 175356-10	2 60879E-12	1 48154E-12	1 99108E-09	4 00E-02	4.09136E-09 3.80E-03 1.07667E-06	2.36868E-09 2.00E-02 1 18434E-07	1 24846E-10 7.00E-04 1 78352E-07	6 20E-03	2 00E-02	2.00E-03	2 13595E-12	4 00E-03	3 99954E-11 2 00E-04 1 99977E-07	8 00
arcinogenic risk - all routes (detecte arcinogenic risk - all routes (undetec DTAL CARCINOGENIC RISK - ALL ROU	rted organics)	Euro 64	fraction	1.345-06	5 55E-06	3 158-06	9 45E-06	2.13E-03	8.34E-05	1 285-05	1 875-04	1 40E-05	4 665-06	2.15E-04	0 00E+00	2.095-05	8 58E-07	1 03E-07	0 00E+00	9 48E-08	2.73E-05	6 62E-04	0 00E+00	2.42E-06	6.2
OTAL CARCINOGENIC RISK - ALL ROU on-Carcinogenic risk - all routes (det on-Carcinogenic risk - all routes (und	ected organics)	Jun Ki	nocion	1.0742'00	3 332-06		12.16192855		4 2434 19059	1 200-03	10/2-04	1 401-03	4 002-00		0 002517535						2/30403	0 041-04	0.000-00	2.421-00	0 298095

TABLE 7-15 RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A) MISSOURI ELECTRIC WORKS

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				€	<u> </u>	듄	윧	ğ	욛	ğ	()	ž	ъ	
Exposure Route	Parameter	Symbol	Units	<u> </u>		<u>₹</u>			ē	<u>_</u>			ō	
	Inhalation Cancer Slope Factor	CSF _{max}	kg-d/mg	3.085-01						2.10E+00	2.00E-02	3 00E-02		
	Risk	R	fraction	0.00E+00						3.13E-04	8.42E-06	2.835-07		
	Total carcinogenic risk for exposure route	R,	fraction									Ŀ	7.078.84	17
	Average Intake from inhalation non-carcinogens	L.	mg/kg-d	0	4.84899E-05	0.000585843	6.3297BE-05	n	0	0.001736614	0.004913425	0.000110074	1	
	Inhalation Reference Dase	RfD	mg/kg-d	_	12.2,	8 57E-04	5.71E-04	•	•	1 40E-01	1 14E-02	2.86E-02	1	
	Hazard Quotient	HQ	mg/kg-d				0 110854286				0.431002163			
	Total Hazard Index	н	mg/kg-d									E	7.446	6
scidental ingestion of creek water		C.,	ug/l	5.26519E-09		0 001433262					0 029336582			
	POE concentration	C.	mg/m3	5.26519E-09	0.0001186	0.001433262	0.000154858	0.007212425	7.73042E-06	0.000841116	0.029334582	0.000325004	Į	
	Water Ingestion rate	iR	l/d										j	
	Exposure frequency	E .	d/y										- 1	
	Exposure duration Body weight	ED BW	y ka										i	
	Averaging time carcinogens	AT _o	ď										1	
	Averaging time non-carcinogens	ATn _e	ď											
	A Constitution of the Cons		-											
	Average intake from ingestion carcinogens	L,	mg/kg-d	2.14317E-16	4.82755E-12	5 83402E-11	6.30342E-12	2.93578E-10	3 14663E-13	3 42372E-11	1.19413E-09	1 32291E-11		
	Ingestion Cancer Slope Factor	ČSF.	kg-d/mg	7.30E-01				7 00E+00	1.20E-01	5.406-01	2.00€-02	7.20E-01	l l	
	Risk	R	fraction	1 56E-16				2.06E-09	3.78E-14	1.85E-11	2.39E-11	9.52E-12	- 1	
	Total cardinogenic risk for exposure route	R,	fraction									[2.752-09	
												·		
	Average Intake from Ingestion non-carcinogens	ه.	mg/kg-d	2.500376-15	5.63215E-11		7.354E-11	3.42508E-09		3 99434E-10		1 5434E-10	1	
	Ingestion Reference Dose	RfD _o	mg/kg-d		4 006-03	2.00E-02	5.00E-04		3 00E-02	1 00E-02	3.00E-04	3.00E-03		
	Hozord Quofient	HQ	mg/kg-d		1 40804E-08	3 40318E-08	1.4708E-07		1.22369E-10	3 994345-08	4 64384E-05	5 14467E-08		
	Total Hazard Index	HI	mg/kg-d										7,78.0	
Dermal contact with creek water	POE concentration	C.	ug/l	5.26519E-09	0.0001186	0 001433262	0.000154858	0.007212425	7.73042E-06	0.000841116	0 029336582	0.000325004	l l	
	event duration	tevent	hr				****						l	
	absorbed dose per event	Daevent	mg/cm2-ever	2.49869E-14	D	2.00333E-10	2.52675E-12	5.27912E-11	1.935436-11	1.04633E-10	1.06659E-09	4 46083E-12	l l	
	Event frequency	EV	events/day										1	
	Exposure duration	ED	y										ł	
	Exposure frequency	EF .	d/y											
	Skin surface area	SA BW	cm2											
	Body weight Averaging time	AT	kg d/y											
	Averaging time non-carcinogens	ATn _e	d d											
	recovering terms room was all larger to		-										ŀ	
	Absorbed dose for carcinogens	DAD _o	mg/kg-d	1.34255E-13	0	1.07639E-09	1.35762E-11	2.83647E-10	1 03991E-10	5.62195E-10	5 73079E-09	2.39685-11	İ	
	Dermal Cancer Slope Factor	CSF.	ka-d/ma	2.306-01	_			1.80E+00	1.20E-01	5.40E-01	3 00€-03	7.20E-01	i	
	Risk	R	fraction	3 09E-14				5.11E-10	1.25E-11	3.04E-10	1.72E-11	1.735-11	1	
	Total carcinogenic risk for exposure route	R,	fraction										8.185-09	
													1	
	Absorbed dose for non-carcinogens	DAD _{ec}	mg/kg-d	1 5663E-12	0			3.30921E-09	1.21322E-09	6.55894E-09	6.68592E-08			
	Dermal Reference Dose	RfD _{der}	mg/kg-d		4 006-03	2.005-02	5.00E-04		3.006-02	1 00E-02	4.50E-05	3.00E-03	l	
	Hozard Quotient	HQ Hi	mg/kg-d		0	6.27 89 4E-07	3.16778E-07		4.04408E-08	6.55894E-07	0.001485759	9.32089E-08		
	Total Hazard Index	MI	mg/kg-d										2.845-03	
zcinogenic risk - all routes (detects	ed arganics)												3 16E-03	
rcinogenic risk - all routes (undete													1 03E-03	
TAL CARCINOGENIC RISK - ALL ROL		Sum Rt	fraction	1 70E-05	0 00E+00	0 00E+00	0 00E+00	2 93E-04	3 45E-05	3 38E-04	1 02E-05	1 71E-06	4.19E-03	
on-Carcinogenic risk - all routes (de						-							1 09E+02	
on-Carcinogenic risk - all routes (un											·		1 38E+01	
ITAL NON-CARCINOGENIC HAZARD	INDEX - ALL ROUTES	Sum HI	fraction	0	0 002405265	0 693306348	0 137764936		0 1T1908816	0 066871694	7 189574261	0 011544967	1,23€+021	

MEW Site File 3DISC100202

TABLE 7-16
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

					<u> </u>											Chemicals	of Potential Co	oncern					MISSOURI ELEC	
Source Medium	Exposure Medium	Esposure Point	Exposure Route	Parameter	Symbol	Units	Non Contaminant- Specific Parameters	1.1,2,2-Tetrachloroethone	1, 1,2-Trichloroethane	1,1-Dichlaroethane	Total 1,2 Dichloroethene	1,2,4 Trichlarobenzene	1 2-Oichioroethane	1,2-Dichloropropane	1,3-0kchkoroberæene	1.4-Dichlorobergene	2 4,6-Trichlorophenol	2.4-Okritrotoksene	2.6-Dinitrotoluene	2-Chlorophenol	3-Dichloroberziche	4 6-Dinitro-2-Methy/ Phenol	Arocka-1016	Arocka-1221
			N. I. I. Debutette					7.005.07																
Groundwater	AF	Indoor at	Vapour intrusion - Inhalation	POE concentration POE concentration Inhabition rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Co+ Co+ R ET EF ED BW AI _o AIn _o	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25,550 2,190	7.59E-06 7.59E-09	9.30E-05 9.30E-08	2.276-06 2.276-06	7.42E-03 7.42E-06	4.09E-03 4.09E-06	1.925-04 1 925-07	1.065-04 1.065-07	8.90E-03 8.90E-06	6.16E-06	0.00E+00 0.00E+00	6 00E+00 0 00E+00	0 00E+00 0.00E+00	3.06E-07	g 00£+00 0 00£+00		6.76E-08 6.76E-11	
				Average intake from inholation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l _e CSF _{tet} R R ₁	mg/kg-d kg-d/mg fraction fraction		4 19218E-10 2.03E-01 8.51E-11	5.13666E-09 5.70E-02 2.93E-10	1.25379E-07	4 09828E-07	2.259025-07	1.06047E-08 9 10E-02 9.65E-10	5.85468E-09	4 91573E-07	3 40235E-07 2.20E-02 7.49E-09	0 1 09E-02 0.00E+00	0	0	1.69013E-08	o	O	3 73374E-12 4.00E-01 1.49E-12	0 4.005-01 0.00 E+0 0
				Average intake from inhalation non-carchagens Inhalation Reference Dose Hazard Quofient Total Hazard Index	l, RfD _m , HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4.89087E-09	5 99277E-08	1.46275E-06	4 781335-06	2.63553E-06 1 14E-03 0.002311867	1.23722E-07 1 40E-03 8.83726E-05	6.83047E-08 1 14E-03 5.99164E-05	5 73501E-06	3 9694E-06 2.30E-01 1.72583E-05	0	0	0	1 97181E-07	0	0	4.35603E-11	0
	Groundwater	Tap Water	ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-corcnogens	C. C. IR EF ED BW ATe ATe	ug/i mg/m3 1/d d/y y kg d d	350 6 15 25.550 2.190	0.049115 0.049115	0 15444 D 15444	6.479 6.479	10 <i>9</i> 7 10.97	60 52 60 52	0 27144 0 27144	0 14508 0 14508	43.99 43.99	49 62 49 62	0.10241 0.10241	1 10916 1 10916	0 1411 0 1411	1.861 1.861	0 157795 0 157795		0 229 0 229	0.13282 0.13282
				Average intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _o R R _i	mg/kg-d kg-d/mg fraction fraction		2.69123E-07 2.00E-01 5.38E-08	8 46247E-07 5 70E-02 4 82E-08	3.550146-05	6.01096E-05	0 000331616	1.48734E-06 9 10E-02 1.35E-07	7.949596-07 6.806-02 5.416-08	0.000241041	0.00027189 2.40E-02 6.53E-06	5.61151E-07 1 10E-02 6.17E-09	6.07759E-06 6.80E-01 4.13E-06	7 73151E-07 6.70E+00 5 18E-06	1 0304815-05	8.6463E-07 4.50E-01 3.89E-07	5.55425E-07	1.25479E-06 4 00E-01 5.02E-07	7.27781E-07 4 00E-01 2.91E-07
_				Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	K RfD HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6,00E-02	4 00E-03	0 000414183 1.00E-01 0 004141826	1.00E-02	1.00E-02	1.73523E-05 2.00E-02 0.000867616	9.27452E-06 1 10E-03 0.008431382	0 002812146 3 00E-02 0 093738204	0 003172055 3 00E-02 0 10573516	1 00E-04	7 09052E-05 2 00E-03 0.035452603	1 00E-03	5 00E-03	1 008745-05	1 00E-04	1 46393E-05 7 00E-05 0.20913242	8 49078E-06
			Dermal contact with top water	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carchagens	C _w tevent Dosever EV ED EF SA BW AT AIn _e	ug/I hr mg/cm2-even events/day y d/y cm2 kg d/y d	1 1 6 350 6.600 15 25.550 2.190	0.049135 9 08634E-10		6.479 7 68822E-08	10 97 1.470425-07	60.52 1 16844E-05	0.27144 2.00651E-09	0 14506 2.10687E-09	43.99 5 93365E-06	49.62 4 85357E-06	0 10241 1.14437E-08	1 10916 1 00576E-08	0 1411 0	1.881 3.10776E-08	0 157795 9.3442E-09	0 101365 1.01879E-09	0.229 0	0.13282 5.67678E-08
				Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{aser} R R _t	mg/kg-d kg-d/mg fraction fraction		3.28602E-08 2.00E-01 6.57E-09	7,67467E-08 5 70E-02 4.37E-09	2,78045-08	5.31769 E -06	0.000422559	7.25641E-08 9 10E-02 6 60E-09	7.61936E-08 6 80E-02 5.18E-09	0 000214587	0.000175526 2 40E-02 4.21E-06	4.13853E-07 1 10E-02 4.55E-09	3.63728E-07 8 00E-01 2.91E-07	0 6.70 E+ 00 0.00 E+ 00	1 1 239E-0 6	3.37927E-07 4 50E-01 1.52E-07	3 684395-08	0 4 00E-01 0.00E+00	2 05297E-06 4 00E-01 8.21E-07
				Absorbed dose for non-carcinogers Dermal Reference Dose Hazard Quotient Tofal Hazard Index	DAD _m RFD _{dar} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6 00E-02	8.95378E-07 4 00E-03 0.000223845	3.2438E-05 1.00E-01 0.00032438	1.005-02	1.00E-02	2.005-02	8.88925E-07 1 10E-03 0.000608114	3.00E-02	3 00E-02	1.00E-04	2.00E-03	0 1 005-03 0		3.94248E-06	4.29846E-07 1 00E-04 0.00429846	0 7 00E-05 0	2.39513E-05
(only calculated for	Air or COPC with Henry!	hdoor Air s Law > 1e-5 atm m3/	Vapors from top water mol. those with a 'Y')	Concentration in tap water Concentration in tap water Volatilization factor POE concentration Inhalation rate Exposure time Exposure trequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C. C. VF C. AT. BW AT. AT.	ug/i mg/m3 dimensioniess mg/m3 m3/hr h/d d/y Y kg d	0.0005 y 0.42 24 350 6 15 25.550 2.190		0 15444 0 15444 9 0.00007722	6.479 6.479 7 0.0032395	10.97 10.97 0.005485	60.52 60.52 0.03026	0.27144 0.27144 0.00013572	0 14508 0 14508 7 0.00007254	43.99 43.99 (0.021995	49 62 49 62 0.02481	0.10241 0.10241 0	1 10916 1.10916 0	0.1411 0.1411 0 0	1.881 1.881 / 0 0009405	0.15779\$ 0.15779\$ 0	0 101365 0 101365 y 0	0.229 0 229 0 0001145	0.13282 0.13282 0
				Average intake from inhalation carcinogens	6	mg/kg-d		1.35638E-06	4,26508E-06	0 000178927	0.000302952	0.001671347	7.49621E-06	4 00659E-06	0.001214847	0 001370328	0	0	0	5.19465E-05	0	0	6.32416E-06	0

TABLE 7-16
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

																								WIDSOOM EIT	CTRIC WORK
																CI	emicals of Po	ential Concern	n						
Exposure Route	Parameter	Symbol	Units	Aroclar-1232	Aractor-1242	Arockar-1248	Aroclor-1254	Arocior-1260 (Fillered)	Вегдега	Berzo(a) antitracene	Berzolajpyrene	Berzo[b]fluoranithene	Benzo(k) fluoranthene	bs(2-Chloroeffnyl) Efher	bs(2-Chlorobopropy)) Ethe	8s (2-efftyfhexyl phifhodole)	Promodichiaromethane	Carbon Tetrachlaride	Chloroberzene	Chlorodibromomethane	Chloroform	Diber <i>ao</i> (a.h)Anthracene	Olbenzofutan	Hexachiaro-) 3-Butadiene	:
Vapour intrusion - inhalation	POE concentration POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Com Com IR EI ED BW AI _C AIn _o	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00E+00 0.00E+00	3 485-08 3.485-11	0.00E+00 0 00E+00	5.00E-08 5.00E-11	2.08E-06 2.08E-09	2.17E-03 2.17E-06	0.0+300.0 0.0+300.0	0 00E+00 0 00E+00	5.216-08 5.216-11	0.00E+00	4 115-04 4.115-07	0.00E+00 0.00E+00	0.005+00	1.20E-03 1.20E-06	3.046-08	1.52E+00 1.52E-03	9 87E-05 9.87E-08	1 13E-02 1.13E-05	0.00E+00 0.00E+00		7 48E-07 7.48E-10	1,20E
	Average Infate from inhalation carcinogens inhalation Cancer Sope Factor Risk Total carcinogenic risk for exposure route	la CSF _{min} R R	mg/kg-d kg-d/mg fraction fraction	0 4.005-01 0.005+00	1 9221E-12 4.00E-01 7.69E-13	0 4.00€-01 0.00€+00	2.76164E-12 4 00E-01 1.10E-12	1 14884E-10 4.00E-01 4.60E-11	1.19855E-07 2.73E-02 3.27E-09	0 3.06£-01 0.00£+00	0 3 08E+00 0 00E+00	2.87763E-12 3.08E-01 8.86E-13	0 3.086-01 0.00E+00	2.27007E-08 1.16E+00 2.63E-08	0	0	6.62795E-08	1 67908E-09 5 20E-02 8.73E-11	8.3954E-05	5 45148E-09	6.24132E-07 8 10E-02 5.06E-08	0 3.08E-01 0.00E+00		4 131425-11 7.705-02 3 185-12	1 61E
	Average intake from inhalation non-carcinogens inhalation Reference Dase Hazard Quotient Total Hazard Index	i, RfD _{ink} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.24245E-11	0	3.22192E-11	1.340325-09	1.39831E-06 8.57E-03 0.000163164	0	0	3.35724E-11	0	2.64842E-07	0	0	7.7326E-07	1.958936-08	0.000979463 1 70E-02 0 057615471	6.36007E-08	7.28153E-06	0	2.09425E-07	4.81999E-10	7.7326
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT., ATn.,	ug/i mg/m3 I/d d/y y kg d	0 1603 0 1603	0.0916 0.0916	0.05954 0.05954	0.10076 0.10076	4 122 4.122	75.73 75.73	0 65036 0 65036	0 60456 0.60456	0 922185 0.922185	0.5313 0.5313	5.616 5.616	0.81432 0.81432	109.92 109 92	2.34 2.34	0 04389 0 04389	2901 18 2901 18	0.19188 0.19188	12.168 12.168	0 47335 0 47335			
	Average intake from Ingestion carcinogens Ingestion Concer Slope Factor Risk Total carcinogenic risk for exposure route	l, CSF, R R,	mg/kg-d kg-d/mg fraction fraction	8.78356E-07 4 00E-01 3.51E-07	5.01918E-07 4 00E-01 2.01E-07	4 00E-01	5.5211E-07 4 00E-01 2.21E-07	2.25863E-05 4 00E-01 9.03E-06	0 000414959 5 50E-02 2.28E-05	3.56362E-06 7.30E-01 2.60E-06	3.31266E-06 7.30E+00 2.42E-05	5.05307E-06 7 30E-01 3.69E-06	2.91123E-06 7 30E-02 2.13E-07	3.07726E-05 1 10E+00 3.38E-05	4.46203E-06	0 000602301 1 40E-02 8 43E-06	1.28219E-05 6.20E-02 7.95E-07	2.40493E-07 1.30E-01 3.13E-08	0 015896877	1.0514E-06 8.40E-02 8.83E-08	6.6674E-05	2.70329E-06 7 30E+00 1.97E-05		3 73929E-06 7 80E-02 2.92E-07	1 60E
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	l, RID, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 02475E-Q5	5.85571E-06	3 80621E-06	6 44128E-06 2.00E-05 0.322063927	0 000263507	0 004841187 4.005-03 1.210296804	4.15755E-05	3.86477E-05	5.89525E-05	3 396446-05	0 000359014	4 00E-02		0.000149589 2 00E-02 0.007479452	2.80575E-06 7 00E-04 0.004008219	2.00E-02	2 00E-02	1 00E-02	3 15384E-05	4 00E-03	4.3625E-05 2 00E-04 0.218125114	8.008
Dermal contact with top water	POE concentration	C.	ug/l	0 1603	0.0916	0 05954	0.10076	4.122	75.73	0 65036	0.60456	0 922185	0.5313	5 616	0.81432	109.92	2.34	0 04389	2901 18	0.19188	12.168	0 49335	0.7557	0.68242	0 67
	event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carchogens	levent Doewe EV ED EF SA BW AT ATn _o	hr mg/cm2-ever- events/day y d/y cm2 kg d/y d	6.85129E-08	2.996265-07	2.08921E-07	5 61245-07	0.000143389	1 76209E-06	1 20373E-06	1.91842E-06	2 96952E-06	1 68645-06	2.26685E-08	1.1527E-07	2.47184E-Q5	2.80879E-08	1 74396-09	0.000152749	2.14049E-09	1.61946-07	2.4313E-06	1.98459E-07	2.41637E-07	4.62517E
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{der} R R,	mg/kg-d kg-d/mg fraction fraction	2.47773E-06 4.00E-01 9 91E-07	4.00E-01		2.02969E-05 4.00E-01 8 12E-06	0 00518558 4.00E-01 2.07E-03	6.37248E-05 5.50E-02 3.50E-06	4.35323E-05 2.35E-01 1.02E-05	6.93786E-05 2.35E+00 1 63E-04	0.000107391 2 30E-02 2.47E-06		8 19794E-07 1 10E+00 9.02E-07	4.16866E-06	0 000893926 1 40E-02 1 25E-05	1.01578E-06 6 20E-02 6.30E-08	6.30671E-08 1.30E-01 8.20E-09	0 005524088	7.74093E-08 8.40E-02 6.50E-09	5 85645E-06	8.79266E-05 7.30E+00 6.42E-04		8.73864E-06 7.80E-02 6 82E-07	1 60E-
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.89068E-05	0.000126418	8.81475E-05	0.000236797 2 005-05 11.83985998	0 060498432	0.000743456 4.006-03 0 185863921	0.000507877	0.000809417	0.001252895	0.00071152	9.56426E-06	4 00E-02		2.005-02	7 00E-04	6.20E-03	2.00E-02	2.00€-03	0.00102581	4 00E-03	0 000101951 2.00E-04 0.509753746	8.006
Vapors from tap water	Concentration in top water Concentration in top water Volatilization factor	Cw Cw Vf	ug/l mg/m3 climensioniess	0 1603 0 1603	0.0916 Y	0 05954	0 10076 0.10076 y	4.122 4.122 y	75.73 75.73	0.65036 0.65036	0.60456 0.60456	0.922185 0 922185 y	0.5313 0.5313	5.616 5.616 Y		109.92 109.92	234 234		2901 18 2901.18	0.19188 0 19188	12.168 12.168 y	0 49335 0.49335		0.68242 0 68242 y	
, those with a 'V')	POE concentration inhalation rate Exposure time Exposure trequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C _{o-tap} IR ET ED BW AT _o ATn _o	mg/m3 m3/hr h/d d/y y kg d	o	0 0000458	0	0.00005038	0.002061	0.037845	, 0	0	0 000441093	0	0.002808	0	0	0.00117	0.000021945	1 45059	0.00009594	0.004084	0	0.00037785	0 00034121	0.000338
	Average Intake from inhalation carcinogens	L	mg/kg-d	0	2.52967E-06	0	2 78263E-06	0 000113835	0.002091393	0	0	2.54675E-05	0	0 000155094	0	O	6 46225E-05	1.21209E-06	0.080120259	5 29904E-06	0.000336037	0	2.08697E-05	1 884 6E-05	1.87195E-(

TABLE 7-16
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

													SOURI ELECTR	
		_							· ·	emicals of Pol	ential Concer	,		
Exposure Route	Parameter	Symbol	Units	Indeno(1,2,3-cd)Pyrene	2-methymapthalene	Naphthatene	Nitrobergene	Niitoeod-n-propytamine	Pentachlorophenol	Tetrachloroeffene	Trichtoroethene	Vinyl Chloride	<u>जि</u>	
				0.005.00										_
Vapour intrusion - inhalation	POE concentration POE concentration	C°* C°*	ug/m3 mg/m3	0.00E+00	2.19E-05 2.19E-08	2.75E-04 2.75E-07	6.87E-06 6.87E-09	0.00E+00 0.00E+00	0.00E+00 0.00E+00	1.315-03	2.50E-02 2.50E-05	9 36E-04 9.36E-07		
	Inhalation rate	R	m3/hr		2.1,250	2.752 07	5.52 2-07	W.002.00	0002-00	1201200	2002.00	7.000-07	- 1	
	Exposure time	ET	h/d										- 1	
	Exposure frequency	E	d/y											
	Exposure duration Body weight	ED BW	y kg										- 1	
	Averaging firme carcinogens	AT _o	a										- 1	
	Averaging time non-carcinogens	Aln _e	d										i	
													- 1	
	Average intake from inhalation carcinogens	ا 	mg/kg-d	0	1 20965-09	1.51895-08	3.7945E-10	0	0	7.23551E-08		5.1698E-08		
	Inhatation Concer Slope Factor	C2F _{PA}	kg-d/mg	3.085-01						2.10E+00	6.00E-03	3 00E-02		
	Risk Total carcinogenic risk for exposure route	R R,	fraction fraction	0.00E+00						1.52E-07	8.28E-09	1.55E-09	2,8367	į
		•										ī		į
	Average intake from inhalation non-carcinogens	4	mg/kg-d	0	1 41125-08	1.77205E-07	4 42692E-09	0	0	8.44142E-07				
	Inhosation Reference Dose	RfD _{mh}	mg/kg-d			8.57E-04	5 71E-04			1 40E-01	1 14E-02	2 86E-02		
	Hazard Quotient Total Hazard Index	HQ HI	mg/kg-d			0.000206774	7.75292E-06			6 02959E-06	0 001413122		1 4 20 Mg	
	TOTAL FRANCIA		mg/kg-d										·	_
ingestion of tap water	POE concentration	C,	ug/l	0.5313	0.1505	1.8163	0.19646	7.5816	4 14032	5.39	15.25	0.34164	1	ı
	POE concentration	C.	mg/m3	0.5313	0.1505	1.8183	0 19646	7.5816	4 14032	5.39	15 25	0.34164		ı
	Water ingestion rate	EF	l/d										I	į
	Exposure frequency Exposure duration	ED)	d/y y											
	Body weight	B₩	kg											
	Averaging time carcinogens	AT.	ď											
	Averaging time non-carcinogens	Alu-	đ											
	Average Intake from ingestion carcinogens	1	mg/kg-d	2011235.04	0.244605.07	9 96329E-06	1.074495.04	115/3506	2 249475.05	2.95342E-05	9 364146.06	0.000001872		
	Ingestion Cancer Slope Factor	C2F"	kg-d/mg	7.30E-01	0.240301-07	7 763272-06	12070471200	7 00E+00	1,205-01	5.406-01	6.00E-03	7.20E-01		
	Risk	R	fraction	2.135-06				2.91E-04	2.72E-06	1.59E-05	5.01E-07	1 35E-06		ł
	Total carcinogenic risk for exposure route	R,	fraction										4.69544	í
									B 0000 / / / TO					
	Average intake from ingestion non-carcinogens ingestion Reference Dase	RfD,	mg/kg-d mg/kg-d	3.37644E-05	4.00E-03	0.000116238 2.00E-02	5.006-04	0 000484668	3 00E-02	1.00E-02	0 000974886 3.00E-04	0.00002184 3 006-03	i	
	Hazard Quotient	HQ	mg/kg-d			0.005811918					3.249619482	0.00728		
	Total Hazard Index	н	mg/kg-d										1,598401	
	POE concentration	C.	ug/l	0.5313	0 1505	1 8183	0 19646	7 5816	4 14032	5.39	15.25	0.34164		_
ermal contact with tap water	event duration	tevent	hr	0.3313	0 1305	1 6103	U 17040	/ 3016	4 14032	3.37	13.23	0.34164		
	absorbed dose per event	Doevent		1.78289E-06	D	1.74988E-07	2114465-09	3.69993E-08	7 32983E-06	4.7412E-07	3 73936E-07	2.80865E-09	- 1	
	Event frequency	EV	events/day										i	
	Exposure duration Exposure frequency	ED FF	y d/y											
	Skin surface area	SA	cm2											
	Body weight	8W	kg										ı	ı
	Averaging time	AT-	d/y]	ı
	Averaging time non-carcinogens	Aĭn _e	d										ł	
	Absorbed dose for carcinogens	DAD	mg/kg-d	6 4477E-05	0	6.32833E-06	7 64683E-08	1 33806E-06	0.000265079	1.71463E-05	1 35232E-05	1.01573E-07	1	
	Dermal Cancer Slope Factor	CSF _{der}	kg-d/mg	2.30E-01	•			1.80E+00	1.20E-01	5 40E-01	9 00E-04	7.20E-01	i	
	Risk	R	traction	1.485-05				2.415-06	3 185-05	9.26E-06	1 225-08	7.31E-08	<u>.</u> .	
	Total carcinogenic risk for exposure route	R,	fraction										3,026-03	ı
	Absorbed date for non-carcinogens	DAD	mg/kg-d	0.000752231	٨	7.38305E-05	8 92135-07	1 561075.05	0.003092585	0.00020004	0 00015777	1 185026-06		1
	Dermal Reference Date	RfD _{der}	mg/kg-d		4 00E-03	2 00E-02	5 00E-04		3.00E-02	1.00E-02	4 50E-05	3.00E-03		
	Hazard Quotient	HQ	mg/kg-d			0 003691527	0 00178426				3.506007297		1	
	Total Hazard Index	HI	mg/kg-d										3.05E+01	
Vapors from tap water	Concentration in top water	C.	ug/l	0.5313	0.1505	1.8183	0 19646	7.5816	4 14032	5 39	15 25	0.34164	I	
rapus ilom lup water	Concentration in top water	c.	mg/m3	0.5313	0.1505 0.1505	1.8183	0 19646	7.5816 7.5816	4.14032		15 25	0.34164	l	,
	Volatilization factor	VF	dimensionless	4 30.10			y	, ==,0		γ 3.27		γ		ı
hose with a "y")	POE concentration	Co-top	mg/m3	0		0.00090915		0	0				1	
	Inhalation rate	IR	m3/hr										l	
	Exposure time	ET EZ	h/d											
	Exposure frequency Exposure duration	EF ED	d/y y											
	Body weight	BW	y kg										-	
	Averaging time carcinogens	AT _c	ď											
	Averaging time non-carcinogens	ATn _o	d											
	Average intake from inhalation carcinogens	4	mg/kg-d		4.15627E-06		5.42553E-06	0			0.000421151			

TABLE 7-16
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

			<u> </u>								-					Chemicals	of Potential C	oncern						
ce Medium Ex	хровите Месбитп	Esposure Point	Exposure Route	Parameter Inhalation Cancer Slope Factor	Symbol CSF _{in}	Units kg-d/mg	Non Contaminant- Specific Parameters	999 11,222-Tetrachlaroethane	2005 Fig. 17.2-Inchloroethore	1, 1-Dichlaraethane	Total 1.2 Dichloroethene	1,2,4 Trichforobenzene	20.9301 6 1,2-Dichloroefhane	1,2-Dichlorapropane	1,3-Dichlarobenzene	5.20 E. S. C. C. C. C. C. C. C. C. C. C. C. C. C.	SS 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	2.4-Diretrokobene	2.6-Christotokvene	2-Chlorophenol	3,3-Dichloroberzichne	4.6-Dinitro-2-Meltryl Phenol	9:01-30-01-01-01-01-01-01-01-01-01-01-01-01-01	
				Risk Total carcinogenic risk for exposure route	R R	fraction fraction		2.75E-07	2.43E-07				6.82E-07			3.01E-05	0 00E+00						2.53E-06	5 00
				Average intake from inhalation non-carcinogens inhalation Reference Dose	la RfD _{en} a	mg/kg-d mg/kg-d		1 58244E-05	4.97593E-05	0 002087481	0 003534444	0.019499047 1 14E-03		4.67436E-05 1 14E-03	0.014173216	0.015987156 2.30E-01	0	D	0	0 000606043	0	0	7 37819E-05	
				Hozord Quotient	HQ.	mg/kg-d								0.041003143		0 069509375								
				Total Hazard Index	н	mg/kg-d																		
	Surface Water	Creek	incidental ingestion of creek water	POE concentration	C_	ug/l		3 87145E-05	0.00014692	0.005107025	0.168484251	0.003415705	0.000258223	0 000138016	0.277239592	0.332753253	8.07239E-05	0.001055151	0.0001112	0.001482685	0.000124381	7.99002E-05	4.276E-07	2.475
•	00.1000 110.101			POE concentration	C.	mg/m3		3.87145E-05						0.000138016								7.99002E-05		2.47
				Water ingestion rate	iR	Vd	0.05																	
				Exposure frequency	EF .	d/y	52																	
				Exposure duration Body weight	ED BW	y ka	15																	
				Averaging time carcinogens	AT _o	ď	25.550																	
				Averaging time non-carcinogens	ATn _o	d	2,190																	
				Average intake from Ingestion carcinogens	L.	mg/kg-d		1 575868-12	5 9803E-12	2.07879E-10	6.85807E-09	1,39035E-10	1,05108E-11	5.61785E-12	1 12849E-08	1,35446E-08	3.28583E-12	4,29494E-11	4.52634E-12	6.03519E-11	5.06286E-12	3.2523E-12	1,74052E-14	i 1.0
				Ingestion Cancer Slope Factor	C2F₀	kg-d/mg		2,005-01	5 706-02				9 10E-02	6.80E-02		2.40E-02	1 10E-02	6.80E-01	6.70E+00		4 50E-01		4 00E-01	
				Risk	R	fraction		3.15E-13	3 41E-13				9.56E-13	3 82E-13		3.25E-10	3.61E-14	2925-11	3 03E-11		2.285-12		6.96E-15	5
				Total cardinogenic risk for exposure route	R,	fraction																		
				Average intake from ingestion non-carcinogens	6	mg/kg-d		1.8385E-11		2.42525E-09					1.31657E-07			5.010766-10			5.90667E-11		2.03061E-13	
				Ingestion Reference Dose	RfD _o	mg/kg-d		6.00E-02	4 00E-03						3.00E-02	3.00E-02	1.00E-04	2 00E-03		5.00E-03		1 005-04		
				Hazard Quotient Total Hazard Index	HQ Hi	mg/kg-d mg/kg-d		3 06416E-10	1.744232-06	2.42525E-08	0.001065-00	1.6220/150/	& 13131E-07	5.95833E-08	4.3003/6-06	526/336-06	3.633475-07	2,303362-07	5.29073E-08	1.408215-07		3./74330-0/	2.90087E-09	
			Dermal contact with creek water	POF concentration	C _w	ua/l		3.871456-05	0.00014692	0.005107025	0.168484251	0.003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.072395-05	0.001055151	0.0001112	0.001482685	0.000124381	7.99002E-05	4.276E-07	/ 24
				event duration	tevent	hr	2						••••			0.00								
				absorbed dose per event	Doeven		_	1.01289E-12	2. 999 41E-12	9.41817E-11	3.52119E-09	9.32615E-10	2.97547E-12	3.089496-12	5.39677E-08	4 70013E-08	1.27568E-11	1,35316-11	0	3.66143E-11	1.04164E-11	1 13569E-12	0	1 49
				Event frequency Exposure duration	ED ED	events/day	1																	
				Exposure frequency	F	d/v	52																	
				Skin surface area	SA	cm2	6,600																	
				Body weight	BW AT	kg	15 25.550																	
				Averaging time Averaging time non-carcinogens	ATn _a	d∕y d	2,190																	
				Absorbed dose for carcinogens	DAD	mg/kg-d		5.44227F-12	1 411686-11	£ 04039E-10	1 00 1025/0	5.01093E-09	1 699726.11	1 460005.11	2 89968E-07	2.52537E-07	4 R5495-11	7,27022E-11		1 047305.10	5.59672E-11	£ 1000£5.19	•	80
				Dermal Cancer Slope Factor	CSF _{der}	kg-d/mg		2.008-01	5 70E-02		12071732-00	3010/35-0/	9.105-02		2 077002-07	2.405-02	1 10E-02			1 707 ZDL-10	4.50E-01	0.10200C-12	4.00E-01	
				Risk	R	fraction		1 096-12					1 45E-12			6.06E-09	7 54E-13				2.52E-11		0.00€+00	
				Total carcinogenic risk for exposure route	R _i	fraction																		
				Absorbed dose for non-carcinogens	DAD _{no}	mg/kg-d		6 34932E-11	1.88018E-10	5.90377E-09	2.20725E-07	5.84609E-08	1.86517E-10	1.93665E-10	3.38296E-06	2.94627E-06	7 99656E-10	8.48192E-10	0	2.29516E-09	6.52951E-10	7 11907E-11	0	93
				Dermal Reference Dose	RfD _{cter}	mg/kg-d		6 00E-02	4 00E-03						3.00E-02	3.00E-02	1.00E-04	2.00E-03		5.00E-03		1.00E-04	7.00E-05	,
				Hazard Quotient	HQ HI	mg/kg-d		1 058225-09	4 70044E-08	5.90377E-08	2.20725E-05	5.84609E-06	9 32587E-09	1 76059E-07	0.000112765	9.82095-05	7 99656E-D6	4.24096E-07	0	4.59033E-07		7 11907E-07	0	
				Total Hazard Index	nı	mg/kg-d							****											
																								
			Carcinogenic risk - all routes (detects																					
			Carcinogenic risk - all routes (detects Carcinogenic risk - all routes (undete TOTAL CARCINOGENIC RISK - ALL RO	cted organics)	Sum Rt	fraction		3 365-07	2.96E-07	0 00E+00	0 00€+00	0 00E+00	8 25E-07	5 92E-08	0 00€+00	4 09E-05	1 07E-08	4 426-06	5 185-06	0 00E+00	5 41E-07	0 00E+00	3 03E-06	5
			Carcinogenic risk - all routes (undete	cted organics) UTES etected organics)	Sum Rt	fraction		3 365-07	2.96E-07	0 00E+00	0 006+00	0 00E+00	8 25E-07	5 92E-08	0 00 E+ 00	4 095-05	1 07E-08	4 425-06	5 185-06	0 00E+00	5 41E-07	0 00E+00	3 03E-06	1

Notes.

1-ug/l = micrograms per Liter

2-ug/m3 = micrograms per cubic meter

3-h/d = hours per day

4-l/d = Blers per day

5-d/y = days per year

6-y = year

7-kg = kBogram

6-d = day

9-tr = hour

10-mg/kg-d = milligrams per kBogram per day

11-kg-d/mg = kBograms per day per milligram

12-cm2 = square continuer

13-m3/hr = cubic meter

15-mg/cm2-event = milligrams per square centinueter per event

16-mg/cm3-event = milligrams per cubic centinueter per event

TABLE 7-16
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL A)
MISSOURI ELECTRIC WORKS

																d	nemicals of Po	tenhal Conce	m						
Exposure Route	Parameter Inhalation Cancer Sope Factor	Symbol CSF _{bb}	Units kg-d/mg	10-300 P	Aroclor-1242	Aroco (1248	Arocor-1254	9300* Arocker-1260 (Filtered)	2.73E-02	988 988 998 998 998 998 998 998 998 998	S Bernol of pyrene	Second Diffuoranthene	Serzo(k) fluoranthene	00+391 L	bs(2-Chlarokopropyl) Ether	Bs (2-eftryfhexyl phthodale)	Fromodichloromethone	205-02	Chorobertane	Chlorodbromornethane	6 10E-02	989 Diberzo(a.h)Anthracene	Diberzohaan	9-ejpolya-(* (-o.o)-poxael-(02	1 61 1
	Risk	R	fraction	0.00E+00	1.01E-06		1.11E-06	4.55E-05	5 71E-05	0.00E+00	0 00 E+ 00	7.84E-06	0 00E+00	1 80E-04				6,30E-08			2,72F-05	0.00E+00		1 45E-06	
	Total carcinogenic risk for exposure route	R,	fraction																						
	Average intake from Inhalation non-carcinogens Inhalation Reference Dose Hazard Quotient Total Hazard Index	RfD _{PM} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.95128E-05	0	3.2464E-05	0 001329075	0.024399584 8 57E-03 2.847092598	0	0	0.00029712	0	0 001809429	0	0	0.000753929	1.41416-05	0.934736351 1 70E-02 54 98449122		0 00392043	0	0.00024348	0 00021987	0.0002183
Incidental Ingestion of creek water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C. IR IR EF ED BW AT. ATIN.	ug/i mg/m3 l/d d/y y kg d d	_		1 11168E-07 1.11168E-07			0.003648704 0.003648704			9.13887E-09 9.13887E-09		0.005342537 0.005342537			0.002226 0.002226	3 4596E-05 3.4596E-05			0 011575497 0.011575497	4.88911E-09 4.88911E-09			
	Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg traction traction	1.21827E-14 4.00E-01 4.87E-15	6.96157E-15 4 00E-01 2.78E-15	4.00E-01	4 00E-01	3.1327E-13 4.00E-01 1.25E-13	1.48519E-10 5.50E-02 8.17E-12	4.942715-14 7.305-01 3.615-14	4.59463E-14 7.30E+00 3.35E-13	3.71993E-16 7.30E-01 2.72E-16	2.14317E-16 7.30E-02 1.56E-17	2.17465E-10 1 10E+00 2.39E-10	3.15325E-11	8.35388E-12 1 406-02 1 17E-13	9.06082E-11 6.20E-02 5.62E-12	1.40821E-12 1.30E-01 1.83E-13		7.43006E-12 8.40E-02 6.24E-13	4 71175E-10	1 99009E-16 7.30E+00 1.45E-15	5.74329E-14	5.18637E-14 7 80E-02 4 0SE-15	1 60E+0
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	I, RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 421325-13	8 12183E-14	5.279195-14	8 93401E-14 2 00E-05 4 467E-09	3.654826-12	1 73272E-09 4 00E-03 4.33179E-07	5.7665E-13	5 360415-13	4 33992E-15	2.50037E-15	2 5371 E-09	3,67879E-10 4.00E-02 9.19697E-09	2.00E-02	1,0571E-09 2,00E-02 5,28548E-08	7.00E-04	6.45637E-07 2.00E-02 3.22819E-05	2.00E-02	1 006-02	2 32177E-15	4 00E-03	6.05076E-13 2 00E-04 3.02538E-09	8 00E-0
Dermal contact with creek water	POE concentration	C.	ug/l	2.99297E-07	1,710276-07	1.111686-07	1.88135-07	7.69621E-06	0.003648704	1,21 429E-0 6	1.12878E-06	9 13887E-09	5 26519E-09	0 005342537	0 000774668	0.000205232	0.002226	3.4596E-05	1.35956262	0.000182537	0.011575497	4.889116-09	1,41097E-06	1.27415E-06	4.0064264
	event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sich surface area Body weight Averaging time non-carcinogens	tevent Doever EV ED EF SA BW AT ATn _o	hr mg/cm2-ever events/day y d/y cm2 kg d/y d	r 1809075-13	791158E-13	5 51653E-13	1.48195E-12	3.786175-10	1.36534E-10	3.178445-12	5.06557E-12	4 1617 5 E-14	2.36346E-14	3.176335-11	1.55078E-10	6.52686E-11	3.77871E-11	1.99165E-12	1.077526-07	2.8797E-12	2.34503E-10	3.40744E-14	5.24028E-13	6.38038E-13	3.84409E-
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD。 CSF _{dan} R R	mg/kg-d kg-d/mg traction traction	9.72014E-13 4.00E-01 3.89E-13	4.25089E-12 4 00E-01 1.70E-12		4.00E-01	4.00E-01	7.33597E-10 5.50E-02 4.03E-11	1.70778E-11 2.35E-01 4.01E-12	2.72173E-11 2.35E+00 6.40E-11	2 23611E-13 2.30E-02 5.14E-15	1.26989E-13 7.30E-02 9 27E-15	1 10E+00	8.33234E-10	3 50688E-10 1 405-02 4.91E-12	6.20E-02	1 07011E-11 1 30E-01 1 39E-12		1.54726E-11 8.40E-02 1.30E-12	1.25998E-09	1.83082E-13 7.30E+00 1.34E-12	2.81565-12	3 42817E-12 7.80E-02 2.67E-13	1 60E+0
	Absorbed dase for non-carcinogens Dermal Reference Dose Hazard Quofient Total Hazard Index	DAD _{no} RfD _{dar} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 134026-11	4.95937E-11	3 458035-11	9.28958E-11 2.00E-05 4.64479E-06	2.37336E-08	8.55864E-09 4 00E-03 2.13966E-06	1.99245-10	3.175356-10	2.60879E-12	1 481545-12	1 99108E-09	9.72106E-09 4.00E-02 2.43026E-07	3.80E-03		1.24846E-10 7.00E-04 1 78352E-07	6.20E-03	2.00E-02	2.006-03	2.13595E-12	4 00E-03	3 99954E-11 2.00E-04 1 99977E-07	8.00E-0
Carcinogenic risk - all routes (detecte Carcinogenic risk - all routes (undetec TOTAL CARCINOGENIC RISK - ALL ROL	cted arganics)	Sum Rt	fraction	1 345-06	5 555-06	3 155-06	9 45E-06	2 135-03	8.34E-05	1 285-05	1 875-04	1 40E-05	4 665-06	2.155-04	0 00E+00	2.091-05	8 58E-07	1 03E-07	0 00€+00	9 485-08	2 73E-05	6 62E-04	0 00E+00	2 42E-06	6 28F-0
Non-Carcinogenic risk - all routes (de Non-Carcinogenic risk - all routes (un TOTAL NON-CARCINOGENIC HAZARD	tected arganics) detected organics)		fraction	0	0		12.16192855	0	4 2434 19059	0	0	0	- 6								0 111956852			0 727879063	

TABLE 7-16
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL A)
MISSOUN ELECTRIC WORKS

									C)	emicals of Pot	ential Concer			_
				ed)Pyrene	thatene	_		opykamine	brek	frene	٤	•		
				no(1.2.3-	doughty)	hthalene	репдели	бабър	achlora	chloroe	broethe	Chord	_[
Exposure Route	Parameter	Symbol	Units	ۇ	Ě	<u> </u>	<u>₽</u>	暑	.	Ę	퉏	<u>}</u>	용	
	Inhalation Cancer Slape Factor	C2F**	kg-d/mg	3.085-01						2.10€+00	6.00E-03	3 00E-02		
	Risk	R	fraction	, 0.00E+00						3.13E-04	2.53E-06	2.83E-07		
	Total carcinogenic risk for exposure route	R,	fraction									E	7 01E-04	
	Average Intake from inhalation non-carcinogens	L	mg/kg-d	0	4.84899E-05	0.000585841	6.32978E-05	0	0	0.001736614	0.004913425	0 000110074	1	
	Inhalation Reference Dose	RfD _{mb}	mg/kg-d	_		8 57E-04	5.71E-04		-	1 406-01	1.14E-02	2.86E-02	- 1	
	Hazard Quotient	HQ	mg/kg-d				0.110854286			0.012404384	0.431002163	0.003848727	1	
	Total Hazard Index	HI	mg/kg-d										7 64 10	
	POE concentration	C.	ug/l	5.26519E-09	0.0001104	0.001433040	0.000154000	0.007212425	2 220425 04	0 000841116	0.0000011000	0.000000004		
cidental ingestion of creek water	POE concentration	Ç.	mg/m3	5.26519E-09						0 000841116			I	
	Water ngestion rate	IR	mg/ms Vd	3.403170-07	0.0001100	V.W1433262	V.SEC 134636	U.DU/ 212423	/-/JU94E-00	J 000041110	J.UZ7330302	U.U.G.23404	I	
	Exposure frequency	EF	d/v										Į	
	Exposure duration	ED.	y ,										ł	
	Body weight	BW	kg										i	
	Averaging time carcinogens	AT _c	d										1	
	Averaging time non-carcinogens	ATn _o	đ											
	Average intake from ingestion carcinogens	L	mg/kg-d	2 143175-14	4 82755E-12	5.834025-11	4.30342F-12	2 93578F-10	3 144435-13	3.42372E-11	1 19413E-09	1.32291E-11	- 1	
	Ingestion Cancer Slope Factor	CSF.	kg-d/mg	7.30E-01	4110 100 12			7 00E+00	1.205-01	5 40E-01	6 00E-03	7.205-01	l l	
	Risk	R	fraction	1 56E-16				2.06F-09	3.7BE-14	1.85E-11	7 165-12	9 52E-12		
	Total carcinogenic risk for exposure route	R,	fraction									[2.736-69	
	Average intake from ingestion non-carcinogens	L	mg/kg-d	2 500275 15	5.632156-11	6.80636E-10	7 2545 11	3.42508E-09	9 /71075 19	3.99434E-10	1.39315E-08	1 5434E-10		
	Ingestion Reference Date	RfD _o	mg/kg-d	23003/613	4 008-03	2.005-02	5 00E-04	3.423000-07	3 006-02	1 00E-02	3.00E-04	3.005-03	- 1	
	Hazard Quatient	HQ	mg/kg-d		1.40804E-08		1.4708E-07			3.99434E-08		5 14467E-08	- 1	
	Total Hazard Index	H	mg/kg-d		1,70071200				12207010	w//			9.924-64	
	POE concentration	C.	ug/l	5 265198-09	0.0001187	0.0014000/0	0.000174000		7 770 605 07	0.000841116	V 0000011200	0.00000001		
ermal contact with creek water	event duration	tevent	∪g/i hr	5 265 176-07	0.0001186	0.001433262	0.000154858	0.00/212425	7 /30425-06	0.000841118	0.027336582	0.000325004		
	absorbed dose per event	Daeveni		2 409405-14		2 00333E-10	2 524755-12	£ 27012E.11	1 035435-11	1.04633E-10	1.06659E-09	4.46083E-12		
	Event frequency	EV	events/day	24/00/1-14	·	200000-10	2-120/JE-12	J. 27 / 122-11	147 SAFFAL-11	1/040000-10	1200371207	4.400022-12	- 1	
	Exposure duration	ED	у										- 1	
	Exposure frequency	EF	d /γ										- 1	
	Skin surface area	SA	cm2										- 1	
	Body weight	BW	kg										- 1	
	Averaging time	AT:	d/y										- 1	
	Averaging time non-carcinogens	Aīn _e	d											
	Absorbed dose for carcinogens	DAD	mg/kg-d	1.34255E-13	0	1.07639E-09	1.35762E-11	2,83647E-10	1.03991E-10	5.62195E-10	5 73079E-09	2.3968E-11		
	Dermal Cancer Slope Factor	CSF ₄₄	kg-d/mg	2 30E-01	_			1 80E+00	1,206-01	5 40E-01	9.00E-04	7.20E-01	- 1	
	Risk	R	fraction	3.09E-14				5.11E-10	1,25E-11	3 04E-10	5.16E-12	1.73E-11	- 1	
	Total carcinogenic risk for exposure route	R,	fraction										8.175-09	
	Absorbed dose for non-carcinogens	DAD	mg/kg-d	1.5663E-12	0	1.25579E-08	1.58389E-10	3.30921E-09	1,213225-09	6 55894E-09	6.68592E-08	2.79627E-10	- 1	
	Dermal Reference Dose	RfD _{der}	mg/kg-d	1.30030-12	4 00E-03	2.006-02	5.00E-04	J.W/2112-07	3.00E-02	1 00E-02	4.50E-05	3.00E-03	J	
	Hazard Quotient	HQ	mg/kg-d			6 27894E-07			4.04408E-08		0.001485759		ţ	
	Total Hazard Index	HI	mg/kg-d		·	0 2/3/42-0/	J 10/10C-0/		72277002.20		Janu 1 4001 37	2	2846-03	
													2.155.00	
cinogenic risk - all routes (detects cinogenic risk - all routes (undetec													3 15E-03 1 03E-03	
AL CARCINOGENIC RISK - ALL ROL		Sum Rt	fraction	1 70E-05	0 00E+00	0 00E+00	0 00E+00	2.93E-04	3 45E-05	3.38E-04	3 05E-06	1 71E-06	4.19E-03	
-Carcinogenic risk - all routes (de													1 09E+02	
-Carcinogenic risk - all routes (un			-,										1.38E+01 1.23E+02	
AL NON-CARCINOGENIC HAZARD	INDEX - ALL ROUTES	Sum HI	fraction	0	0 002405265	D ASSTRUCTED OF	U 1377/493/	0	u 111908916	0 066871694	/ 189574761	0.0111544947	1 715409	

TABLE 7-17
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

										-						Chemicals	of Potential C	oncern							
Source Medium	Ехровите Месійит	Exposure Point	Exposure Route	Parameter	Symbol	Units	Non Contaminant- Specific Parameters	1,1,2,2:Tetrachloroethane	1,2-Indoloroethane	1,1-Dichlaroethane	Total 1,2 Dichloroethene	1,2,4 Trichlorobenzene	1,2-Dichloroeffrane	1,2-Dichloropropane	1,3-Dichlorobenzene	1 4-Dichlorobenzene	2,4,6-Thchlorophenol	2 4-Dinitrotokuene	2.6-Dinifrotokvene	2-Chlorophenol	3,3-Dichlorobenzidine	4,6-Dinitro-2-Methyl Phenol	Aroctor-1016	Aroctor-1221	Amorpho, 1272
Groundwater	Ab	Indoor air	Vapour intrusion - inhalation	POE concentration POE concentration Inhalation rate Exposure time Exposure trequency Exposure duration Body weight Averaging time carchogens Averaging time non-carchogens	Comb Comb IR ET EF ED BW AT a AT n _c	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25,550 2,190	7.59E-06 7.59E-09	9.30E-05 9.30E-08	2.27E-03 2.27E-06	7.A2E-03 7.A2E-06	4.09E-03 4.09E-06	1.925-04 1.925-07	1.06E-04 1.06E-07	8 90E-03 8.90E-06	6.16E-03 6.16E-06		0.00E+00 0.00E+00		3.06E-04 3.06E-07	0.00E+00 0.00E+00	0.00E+00 0.00E+00	6.76E-08 6.76E-11	0.00E+00 0.00E+00	0.00E+00. 00+300.0
				Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L _u CSF _{ini} R R ₁	mg/kg-d kg-d/mg traction traction		4 19218E-10 2.03E-01 8.51E-11	5 13666E-09 5,70E-02 2,93E-10	1,25379E-07	4.09828E-07	2. 259 02E-07	1,06047E-08 9,10E-02 9,65E-10	5.85468E-09	491573E-07	3.40235E-07 2.20E-02 7.49E-09		0	0	1.69013E-08	0	0	3.73374E-12 4.00E-01 1.49E-12	0 4.00E-01 0.00E+00	4.00E-0 0.00E+0
				Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	RfD _{ss} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4.89087E-09	5.99277E-08	1.46275E-06	478133E-06	1.14E-03	1.23722E-07 1.40E-03 8.83726E-05	1 14E-03	5.73501E-06	3 9694E-06 2.30E-01 1.72583E-05		0	0	1.971816-07	0	0	4.35603E-11	0	
	Groundwater	Tap Water	ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., IR EF ED BW AT., ATn.	ug/i mg/m3 l/d d/y y kg d	1 350 6 15 25,550 2,190	0.09259 0.09259	0 106095 0 106095	12.214 12.214	7.58 7.58	40 53 40.53	0 18647 0,18647	0.099665 0.099665				0.761955 0.761955	0.266 0.266	3.546 3.546	0.29747 0.29747	0.19109 0 19109	0 1608 0 1608	0.093235 0.093235	0 112528 0.112525
				Average intake from Ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l, CSF. R R _i	mg/kg-d kg-d/mg fraction fraction		5.07342E-07 2.00E-01 1.01E-07	5.70E-02	6.6926E-05	4 15342E-05	0.000222082	1,02175E-06 9 10E-02 9,30E-08	6.80E-02		0.000214959 2.40E-02 5 16E-06		4.1751E-06 6.80E-01 2.84E-06	1.45753E-06 6 70E+00 9.77E-06	1 94301E-05	1.62997E-06 4.50E-01 7.33E-07	1.047075-06	8.81096E-07 4.00E-01 3.52E-07	5 10877E-07 4.00E-01 2.04E-07	6 16575E-07 4.00E-01 2.47E-07
				Average intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	I, RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	4.00E-03	0.000780804 1.00E-01 0.007808037	1.00E-02	0.002590959 1.00E-02 0.25909589	2 005-02	1 10E-03		3.00E-02	1.00E-04	2.00E-03	1,70046E-05 1,00E-03 0,017004566	5.00E-03		1.22158E-05 1.00E-04 0.122157991	7.00E-05	5.96023E-06	7 19336E-06
			Dermal confact with top water	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure trequency Skin surface area Body weight Averaging time non-carcinogens	C _w tovent Daeve EV ED EF SA BW AT ATn _e	ug/l hr nt mg/cm2-ev events/day y d/y cm2 kg d/y d	1 6 350 4,600 15 25 550 2,190	0.09259 1.71293E-09		12 214 1.44936E-07	7.58 1.01602E-07	40.53 7.82499E-06	0 18647 1:3784E-09	0.099665 1 44735E-09	32 98 4 44855E-06	39.23 3.83727E-06		0.761955 6.90925E-09	0.2 66 0	3.546 5.85864E-08	0.29747 1.76154E-08	0.19109 1.92059E-09	0 1408 0	0.093235 3 9849E-08	0 112525 4.80936E-08
				Absorbed dose for carcinogens Dermat Cancer Stope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{der} R R _i	mg/kg-d kg-d/mg fraction fraction		6.19469E-08 2.00E-01 1.24E-08	5 70E-02	5.24152E-06	3.67439E-06	0.000282986	4,9849E-08 9,10E-02 4,54E-09	5.23424E-08 6.80E-02 3.56E-09		0.000138773 2.40E-02 3.33E-06	1 10E-02	2.49869 E-07 8.00E-01 2.00E-07	0 6.70E+00 0.00E+00	2.118746-06	6.37049E-07 4.50E-01 2.87E-07	6.94 5 7E- 08	0 4.00E-01 0.00E+00	1,44112E-06 4,00E-01 5,76E-07	1.73928E-06 4.00E-01 6 96E-07
				Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{de} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	4.008-03	1,006-01	1.005-02	1.006-02	5.81572E-07 2.00E-02 2.90786E-05	1 10E-03	3.00E-02	3.00E-02		2.00E-03	1,005-03		7.43224E-06	8.10332E-07 1.00E-04 0.008103318	7.00E-05 0	1.6813E-05	2.029165-05
(only calculated fo	Air or COPC with Henry's	indoor Air Law > 1e-5 atm.m3/m	Vapon from tap water ol, those with a 'Y')	Concentration in tap water Concentration in tap water Volatilization factor POE concentration Inhabition rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw Cw VF Comp IR ET EF ED BW AT _c Ain _c	ug/l mg/m3 dimensionle mg/m3 m3/hr h/d d/y y kg d	0.0005 y 0 42 24 350 6 15 25,550 2,190	0,07257 0,07257 0,000046276		у ,	7.58 7.58 / 0.00379	у		0.0 79 665 Y	32 98 y	39.2 3 y		0.761955 0.761955 0		3.546 3.546 7 0.001773	0.29747 0.29747 0	0 19109 0 19109 0	0 1608 0 1608 0.0000804	0.093235 0.093235 0	0.112525 0 112525 0
				Average intake from inhalation carcinogens Inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	ե CSF _{ma} R R _i	mg/kg-d kg-d/mg traction fraction		2.55701E-06 2.03E-01 5.19E-07	5.70E-02	0.000337307	0.000209333	0.001119294	5 14964E-06 9.10E-02 4.69E-07	2.75239E-06	0.00091079	0.001083393 2.20E-02 2.38E-05		O	0	9.79279E-05	0	0	4.44072E-06 4.00E-01 1.78E-06	0 4.00E-01 0 00E+00	0 4.00E-01 0.00E+00

TABLE 7-17
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

					······		. ,								d	hemicals of Pot	ential Concer										
Exposure Route	Parameter	Symbol	Units	Aroctor-1242	Aroclor-1248	Aroctor-1264	Arocka-1260 (Fibered)	Bertzene	Benzo(a) anfinacene	Berzo(a)pyrene	 Berzo(b)fluorcarithene	Berzo(k)fluoranfhene	ba(2-Chioroeffny) Ether	bs(2-Chloroleopropy) Ether	8a (2-ethythexyl phiholofle)	Bromodichloromethane	Corbon Tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroform	Diberac(a h) Anifracene	Dibenzoluran	Hexachioro-1 3-Butadiene	Hexachlorobenzene	Indeno(1,2,3-cd)Pyrene	2-methymoptholene	
Vapour intrusion - inhalation	POE concentration POE concentration Inhalation rate Exposure itme Exposure three Exposure duration Body weight Averaging time carchogens Averaging time non-carchogens	Com Com IR ET ED BW AT _c ATn _o	ug/m3 mg/m3 m3/hr h/d d/y y kg d	3.48E-08 3.48E-11	0.02+300.0	5.00E-08 5.00E-11	2.08E-06 2.08E-09	2.17E-06 2.17E-06	0.00E+00 0.00E+00	0.00÷400 0.00÷400	5.21E-08 5.21E-11	0.00E+00 0.00E+00	411E-04 411E-07	0.00E+00 0.00E+00	0 00E+00 0 00E+00		3.04E-05 3.04E-08	1.52E+00 1.52E-03	9.87E-08 9.87E-08	1,13E-02 1 13E-05	0.00F+00 0.00F+00	3.25E-04 3.25E-07	7.48E-07 7.48E-10	1,20E-06 1,20E-09	0.00E+000 0.00E+000	2.19E-05 2.19E-08	
	Average intake from Inhalation carchogens inhalation Cancer Slope Factor Risk Total carchogenic risk for exposure route	l _e CSF _{late} R R ₁	mg/kg-d kg-d/mg fraction fraction	1 9221E-12 4.00E-01 7.69E-18	0 4,005-01 0,00E+00	2.76164E-12 4.00E-01 1.10E-12	1 14884E-10 4.00E-01 4.60E-11	1.19855E-07 2.73E-02 3.27E-09	0 3.08E-01 0.00E+00	0 3.08E+00 0.00E+00	2.87763E-12 3.06E-01 8.86E-13	0 3.08E-01 0.00E+00	2.27007E-08 1 16E+00 2.43E-08	0	0	6.62795E-08	1.67908E-09 5.20E-02 8.73E-11	8.3954E-05	5.45148E-09	6.24132E-07 8 10E-02 5.06E-08		1.79507E-08	4.13142E-11 7.70E-02 3 18E-12	6.62795E-11 1.61E+00 1.07E-10	0 3.08E-01 0.00E+00	1.2076E-09	1.5189E
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hozzard Quoffent Total Hazzard Index	L RfD _{ink} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.24245E-11	Ď	3.221926-11		1.39831E-06 8.57E-03 0.000163164	0	0	3.357246-11	0	2.64842E-07	0	0	7.7326E-07		0.000979463 1 70E-02 0.057615471	6.36007E-08	7.28153E-06	0	2.09425E-07	4.81999E-10	7.73268-10	o		1.77205E 8.57E 0.0002067
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time caralnogens Averaging time non-caralnogens	C. IR EF ED BW AT, ATr.	ug/i mg/m3 Vd d/y y kg d	0.0643 0.0643	0.041795 0.041795	0.07073 0.07073	2.8935 2.8935	40.34 40.34	0.45653 0.45653	0.42438 0.42438	0.78489 0.78489	0.4522 0.4522	3.858 3.858	0.55941 0.55941	77.16 77.16		0.08274 0.08274	1351.08 1351.08	0.131815 0 131815	8.359 8.359	0.4199 0.4199	0.530475 0.530475	0.479035 0.479035	0.47582 0.47582	0.4522 0.4522	0.2837 0.2837	
	Average intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF. R R,	mg/kg-d kg-d/mg fraction fraction	3.52329E-07 4.00E-01 1.41E-07	2.29014E-07 4.00E-01 9.16E-08	3.87562E-07 4.00E-01 1.55E-07	1.58548E-05 4.00E-01 6.34E-06	0.000221041 5.50E-02 1.22E-05	2.50153E-06 7.30E-01 1.83E-06	2.32537E-06 7.30E+00 1 70E-05	4.30077E-06 7.30E-01 3.14E-06	2 47781E-06 7.30E-02 1.81E-07	2 11397E-05 1 10E+00 2.33E-05	3.06526E-06	0.000422795 1.40E-02 5.92E-06		4.5337E-07 1.30E-01 5.89E-08	0.007403178	7,22274E-07 8,40E-02 6,07E-08	4.58027E-05	2.30062E-06 7.30E+00 1.68E-05	2 90671E-06	2.62485E-06 7.80E-02 2.05E-07	2.60723E-06 1.60E+00 4 17E-06	2.47781E-06 7.90E-01 1.81E-96	1.55452E-06	1.87825E
	Average intake from Ingestion non-carchagens Ingestion Reference Dose Hazard Guotient Total Hazard Index	KTD. HQI HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	4 1105E-06		4.52155E-06 2.00E-05 0.226077626	0.000184973	0.002578813 4.00E-03 0.644703196	2.91846E-05	2.J 1293E-05	5.017568-05	2.89078E-05	0.00024663	4.00E-02	2.005-02		5.28732E-06 7.00E-04 0.007556164	2.00E-02	2.00E-02	0 000534365 1 00E-02 0.05343653	2.68429E-05	3.39116E-05 4.00E-03 0.008477911	3.06232E-05 2.00E-04 0.15311621	8.00E-04		1.81361E-05 4.00E-03 0.004534018	2.00E-
Dermal contact with tap water	POE concentration event ducation absorbed dose per event Event frequency Exposure duration Exposure frequency Sids surface area	Cu tevent Doseven EV ED EF SA	ug/l hr af mg/cm2-even events/day y d/y cm2	0.0643 2 10327E-07	0.041795 1.46655E-07	0.67078 3 93971E-07	2.8935 0.000100654	40.34 9.38632E-07	0.45653 8.449795-07	0.424 38 1.34667E-06	0.78489 2.527426-06	0.4522 1.43532E-06	3.858 1.55725E-08	0.55941 7.91863E-08	77.16 1.73515E-05	1.6075 1.92954E-08	0.08274 3.28754E-09	1351.08 7 11354E-05	D 131815	8.359 1 11247E-07	0.4199 2.06933E-06	0.530475 1.393116-07	0.479035 1.6962E-07	0.47582 3.2467E-07	0.4522 1.51745E-06	0.2837	3.49
	Body weight Averaging time Averaging time non-carcinogens	BW AT ATn _e	kg d/y d	7.000.00	† 00e75 a.				2000015.00																		
	Absorbed dase for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenia risk for exposure route	DAD _e CSF _{eter} R R _e	mg/kg-d kg-d/mg fraction fraction	7.60634E-06 4.00E-01 3.04E-06	5.3037E-06 4.00E-01 2.12E-06	1.42477E-05 4.00E-01 5.70E-06	4,00E-01 1,46E-03	3.3945E-05 5.50E-02 1.87E-06	3.05581E-05 2.35E-01 7.18E-06	4.87013E-05 2.35E+00 1.14E-04	9.14026E-05 2.30E-02 2.10E-06	7,30E-02 3,79E-06	1 10E+00 6 19E-07	2.86372E-06	1.40E-02 8.79E-06	6.20E-02	1.30E-01 1.55E-08	0.002572569	8 40E-02 4 47E-09	4,02318E-06	7.4836E-05 7.30E+00 5.46E-04	5.D381E-06	6 13422E-06 7.80E-02 4.78E-07	1 17415E-05 1 60E+00 1.88E-05	2,30E-01 1,26E-05	0	1.1936-
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quoffent Total Hazard Index	DAD _{ec} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	8.87407E-05		0.000166223 2.00E-05 8.311168083	0.042467786	0.000396025 4.00E-03 0.099006346	0.000356512	0.000568182	0.001066363	0.000605589	6.57032E-06	4.00E-02	3.80E-03	8 14108E-06 2.00E-02 0.000407954	7.00E-04	6.20E-03	2.00E-02	2,00E-03	0 000873087	4.00E-03		8.00E-04	0.000640239	4.00E-03	0.0001391 2.00E- 0.0069591
Vapors from tap water	Concentration in top water Concentration in top water	ر د د د	ug/i mg/m3	0.0643 0.0643	0.041795 0.041795	0.07073 0.07073	2.8935 2.8935	40.34 40.34	0.45653 0.45653	0.42438 0.42438	0.78489 0.78489	0 4522 0.4522	3,858 3,858	0.55941 0.55941	77.16 77.16		0.08274 0.08274	1351.08 1351.08		8.359 8.357	0.4199 0.4199	0.530475 0.530475	0.479035 0.479035	0.47582 0.47582	0.4522 0.4522	0.2837 0.2837	
those with a 'y')	Volatitation factor POE concentration Inholation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	VF Co-top IR ET ED BW ATc ATnc	dimensioniess mg/m3 m3/hr h/d d/y y kg d	y 0.0003215	o	y 0.000035345	0.00144675	, 0.02017	o	o	y 0.000 39 2445	. ه	0.001929	0	0	y 0.00080375	9.00004137	0.67554	/ 6,59075E-05	y 0.00417 9 5	D	y 0.000265238	y 1 0.000239518	0.00023791	o 1	0.00014185	9 0.00171
	Average Intake from Inhalation carchogens Inhalation Cancer Slope Factor Risk Total carchogenic risk for exposure route	la CSF _{ten} R R	mg/kg-d kg-d/mg fraction fraction	1.77574E-06 4 00E-01 7 10E-07	0 4.00E-01 0.00E+00	1.95331E-06 4.00E-01 7.81E-07	7 99082E-05 4 00E-01 3.20E-05	0 001114047 2,73E-02 3,04E-05	0 3.085-01 0.00+300.0	0 3.06E+00 0.00E+00	2.16759E-05 3.08E-01 6.68E-06	0 3.08E-01 0.00E+00	0.000106544 1 16E+00 1.24E-04	0	0	4.43934E-05	2.28498E-06 5.20E-02 1 19E-07	0.037312018	3.64026E-06	0.000230846 8 10E-02 1.87E-05	3.08E-01	1.46498E-05	1.32292E-05 7.70E-02 1.02E-06	1.31405E-05 1.61E+00 2 12E-05	0 3.08£-01 0.00E+00	7.83478E-06	7 46636E-

TABLE 7-17
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL B)
AUSSOURI ELECTRIC WORKS

	er en en en en en en en en en en en en en					Ch	emicals of Pot	ential Concert		- 	
Exposure Route	Parameter	Symbol	Units	Mirobergene	Nitrosodi-n-propykamine	Pentachlorophenol	Tetrochloroethene	Trichloroethene	Vinyi Chloride	Total	
Vapour intrusion - mhalation	POE concentration	Con	ug/m3	6.87E-06	0.00E+00	0,00€+00	1,816-03	2.508-02	9.36E-04		
Yapoor Enroson - Berasalon	POE concentration	Con	mg/m3	6.B7E-09	0.00E+00	0.00E+00	1.315-06	2.505-05	9.365-07	- [
	Inhalation rate	1R	m3/hr							1	
	Exposure time	ET	h/d							4	
	Exposure frequency	EF	d/y								
	Exposure duration	ED	y							1	
	Body weight	BW AT _e	kg d								
	Averaging time carcinogens Averaging time non-carcinogens	ATn _e	d								
	Average in the four Catalogue	VIII.6	•								
	Average intake from inhalation carainagens	L,	mg/kg-d	3,7945E-10	0	0	7,23551E-08	1,380826-06	5 1698E-08		
	Inhalation Cancer Slape Factor	CSF	kg-d/mg		-	•	2.10E+00	4.00E-01	3.00E-02		
	Risk	R	fraction				1.526-07	5.52E-07	1.55E-09		
	Total carcinogenic risk for exposure route	R,	fraction						[7.546-07	
	Average intake from inhalation non-carcinogens	ا حص	mg/kg-d	4.A2692E-09	0	0	8.441426-07	1,61096E-05		ł	
	Inhalation Reference Dose Hazard Quotient	RfD _{tek}	mg/kg-d	5.71E-04			1.40E-01	1 14E-02 0.001413122	2.86E-02	1	
	Total Hazard Index	HQ Hi	mg/kg-d mg/kg-d	7.75292E-06			0.NZY3YE-Q6	UUD 1413122	4 10007E-05	43964	
		•••				·					
ingestion of tap water	POE concentration	C.	ug/l	0.37036	5.2083	2 90636	4,32	11.4	0.234695	1	
-	POE concentration	C,	mg/m3	0.37036	5.2083	2 90636	4.32	11.6	0.234695		
	Water ingestion rate	IR	Vd								
	Exposure frequency	EF	d/y								
	Exposure duration Body weight	BW ED	y_							- 1	
	Averaging time carcinogens	AT _c	kg d							- 1	
	Averaging time non-carcinogens	ATn _c	ď							- 1	
	Averaging in the Horrect Calculation	73.116	•								
	Average intake from Ingestion carcinogens	L.	mg/kg-d	2.02937E-06	2.85386E-05	1.59253E-05	2.36712E-05	6.35616E-05	0.000001286		
	Ingestion Cancer Slope Factor	CSF.	kg-d/mg		7.00E+00	1.205-01	5.40E-01	4.00E-01	7.20E-01		
	Risk	R	fraction		2.00E-04	1.91E-06	1.28E-05	2.54E-05	9.26E-07		
	Total carcinogenic risk for exposure route	R,	fraction						[3.545-04	
	A									1	
	Average intake from ingestion non-carcinogens ingestion Reference Dose	ኒ RfD。	mg/kg-d	2.3676E-05	0.000332951	0.000185795		0.000741553	1.50033E-05 3.00E-03		
	Hazard Quotient	HQ	mg/kg-d mg/kg-d	5,00E-04 0 047351963		3.00E-02	1.00E-02 0.027616438	3.00E-04 2.471841705			
	Total Hazard Index	HI	mg/kg-d	0 047 00 1700			552 510 100	277 10-17 00	[* 300 TO	
		·									
Dermal contact with tap water	POE concentration	Ç.	ug/l	0.37036	5,2088	2.90636	4.32	13.6	0.234695	1	
	event duration	tevent	hr	0.004105.00	0 541705 00	# 1.4F00F 04	4 05 07	0.044375.07	1.92945E-09	- 1	
	absorbed dose per event Event frequency	Daeven! EV	mg/cm2-even events/day	3.986122-09	2341/3640	3 143201-06	3.8E-07	2.84437E-07	1.727435-07	- 1	
	Exposure duration	ED	y							- 1	
	Exposure frequency	EF	d/y							1	
	Sidn surface area	SA	cm2							ſ	
	Body weight	BW	kg							1	
	Averaging time	AT AYD	d/y							- 1	
	Averaging time non-carcinogens	Aĭn _e	d							- 1	
	Absorbed dose for carcinogens	DAD	mg/kg-d	1 44156E-07	9 192E-07	0.000186076	1.37425E-05	1.02865E-05	6 97772E-08	1	
	Dermal Cancer Slope Factor	CSF	kg-d/mg		1.80E+00	1.20E-01	5.40E-01	6.00E-02	7.20E-01	1	
	Rtsk	R	fraction		1,65E-06	2.23E-05	7.42E-06	6.17E-07	5.025-08		
	Total carcinogenic risk for exposure route	R,	fraction							2.225-03	
		- /-								1	
	Absorbed dose for non-cordinogens	DAD _{nc}	ma/ka-d	1,68181E-06	1.0724E-05	0.002170887	0.000160329	0.000120009	8.14068E-07		
	Dermai Reference Dose	RfD _{der}	mg/kg-d	5,006-04		3.00E-02	1,006-02	4.50E-05	3.00E-03	ì	
	Hazard Quotient Total Hazard Index	HQ	mg/kg-d mg/kg-d	0.003363629		0.072362594	0.016032862	2.00000430/	0,0002/1336	1.91E-01	
Vapors from tap water	Concentration in top water	C.	ug/l	0.37036	5.2063	2 90636	4.32	11.6		i	
	Concentration in tap water	C*	mg/m3	0.37036	5.2083	2 90636	4.32	11.6	0.234695	j	
	Volafization factor	VF	dimensionless					у	у	1	
hose with a "y")	POE concentration	C ₀₄₀₀	mg/m3	0.00018518	0	0	0.00216	0.0058	0.000117348	J	
	Inhalation rate Exposure fime	IR ET	m3/hr							1	
	Exposure frequency	EF	h/d d/y							ļ	
	Exposure duration	ED	y Y]	
	Body weight	BW	ko							1	
	Averaging time carcinogens	AT _c	ď								
	Averaging time non-carcinogens	ATn _c	d							j	
		,								j	
	Average intake from inhalation coronogens	ار 	mg/kg-d	1.0228E-05	0	0	0.000119303		6.48144E-06	j	
	Introduction Consess flower Lands	CSF _{ba}	kg-d/mg				2 10 E+0 0	4.00E-01	3.00E-02		
	Inhalation Cancer Slope Factor										
	Risk Total carcinogenic risk for exposure route	R R	fraction fraction				2.51E-04	1.28E-04	1.94E-07		

TABLE 7-17
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

															Chemicals	of Potential C	oncem							
							9														72			
							2			Ě	2					_				9	<u>\$</u>			
							و	ğ	g.	ŧ	ē	Ě	Ě	Ě	Ĕ	Ę	•	•		\$	Ĭ.			
							욽	ŧ	₽	5	\$	Ě	ğ	Ē	Ê	~	£	Ę	3	\$	ŧ			
						Non	ğ	ğ	ĕ	Ş	ğ	ĕ	Ę	췯	Ę	ğ	₫.	₫	Ē	흏	.	22	<u> </u>	82
						Contaminant-	₽.	\$	ž	7	후	養	¥	풁	¥	퉏	흌	ŧ	5	욽	뢡	ž	ĩ	7
						Specific	2	্ব	ŧ	- 5	Ę	Ž.	Ť	*	Ž	<u> </u>	₽	†	욽	₹	ት	뒃	뮻	8
Source Medium Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbol	Units	Parameters								. <u> </u>	<u> </u>				<u> </u>		*			₹
											0.013058433				0.012639584	0	_				_			0
			Average intake from inhalation non-carcinogens	RfD	mg/kg-d mg/kg-d		2783175-0	3.416275-03	0,00393525	0,002442214	1 14E-03	1.405-03	1 14E-03	03010623683	2.30E-01	U	0		0 001142492	0	U	5 18084E-05	U	U
			Inhalation Reference Dose Hazard Quofient	HQ	mg/kg-d mg/kg-d							0.042913644			0.054954711									
			Total Hazard Index	HI	mg/kg-d						117.000	02 127 100 17			1201101111									
																		-						
Surface Water	Creek	incidental ingestion of creek water		c.	υ g/ I										0.332753253					0.000124381				2.99297E-07
			POE concentration	Ç.	mg/m3		3,871456-00	0.00014692	0.005107025	0 168484251	0.003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.07239E-05	0.001055151	0.0001112	0.001482685	0.000124381	7 99002E-05	4.276E-07	2.479 8 9E-07	2 99297E-07
			Water Ingestion rate	IR FF	Ųd d/γ	0.05 52																		
			Exposure frequency Exposure duration	ED	Q/Y	52																		
			Body weight	BW	ka	15																		
			Averaging time carcinogens	ΑĬε	ď	25,550																		
			Averaging time non-carcinogens	ATn _o	d	2,190																		
				_																				
			Average intake from ingestion carcinogens	ا 	mg/kg-d		1.57586E-1			6.85807E-09	1.39035E-10			1.12849E-06					6.03519E-11		3.2523E-12		1.00943E-14	
			Ingestion Cancer Slope Factor	CSF.	kg-d/mg		2.00E-0 3.15E-1					9 10E-02 9.56E-13	6.80E-02 3.82E-13		2.40E-02 3.25E-10		6.80E-01 2.92E-11			4.50E-01 2.28E-12		4.00E-01 6 96E-15	4,00E-01 4,04E-15	
			rosk Total carcinogenic risk for exposure route	Ř.	fraction fraction		3.132-1	3.415-13	•			7200-13	3.022-13		323010	3.010-14	2.725-11	303511		2.200-12		0 FOE-13	4,045-10	4.0/5-13
			TOTAL COLOR DESIGNATION TO COMPANY TO CO.																					
			Average intake from ingestion non-carcinogens	L	mg/kg-d		1.8385E-1	6977015-11	2.42525E-09	8,00108E-08	1.62207E-09	1,22626E-10	6.55416E-11	1.31657E-07	1.58025-07	3.83347E-11	5.01076E-10	5.29073E-11	7.04106E-10	5 90667E-11	3.79435E-11	2.03061E-13	1 17766E-13	1.42132E-13
			Ingestion Reference Dose	RfD.	mg/kg-d		6.00E-0						1 10E-03				2.005-03				1.00E-04	7.00E-05		
			Hazard Quotient	HQ	mg/kg-d		3.064168-1	0 1.74425E-08	2 42525E-08	8.00108E-06	1.62207E-07	6 131315-09	5.95833E-08	4.38857E-06	5.26733E-06	3.83347E-07	2.50538E-07	5.28073E-08	1.408215-07		3.79435E-07	2.90087E-09		
			Total Hazard Index	HI	mg/kg-d																	:		
		Dermal contact with creek water	POE concentration	C.,	ug/l		3.87145E-0	5 0.00014692	0.005107025	0.168484251	0.003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.07239E-05	0.001055151	0.0001112	0.001482685	0.000124381	7.99002E-05	4.276E-07	2.47989E-07	2.99297E-07
			event duration	tevent	hr	2																		
			absorbed dase per event	Daeven		nt	1 012895-1	2 2,999416-12	9,418176-11	3.52119E-09	9.32615E-10	2 97547E-12	3.08949E-12	5.39677E-08	4.70013E-08	1.275688-11	1.3531E-11	0	3.66143E-11	1.04164E-11	1 13569E-12	0	1 49895E-13	1.80907E-13
			Event frequency	€V	events/day	!																		
			Exposure duration	ED EF	y de.																			
			Exposure frequency Skin surface area	SA.	d/y cm2	6,600																		
			Body weight	BW	ko	15																		
			Averaging time	AT	ďγ	25,550																		
			Averaging time non-carcinogens	Aln _e	ď	2,190																		
				D. D													7.02		10/7					
			Absorbed dose for carcinogens	DAD.	mg/kg-d		5.44227E-1			1.89193E-06	5.01093E-09			2.89968E-07			7.27022E-11			5.59672E-11	6 10206E-12			9.72014E-13
			Dermal Cancer Slope Factor	CSF _{der}	kg-d/mg		2.00E-0 1.09E-1					9 10E-02 1.45E-12	6,80E-02 1 13E-12		2.40E-02 6.06E-09	1 106-02				4.50E-01 2.52E-11		4,00E-01 0 00E+00	4.00E-01	4.00E-01 3,89E-13
			Risk Total carcinogenic risk for expasure route	R.	fraction fraction		1275-1	2 7.175-1	,			1.490-12	1 135-12		0,002-07	7.54E-13	5.620-11	0305-00		2,026-11		0 002+00	3.22E-13	3.576-13
			Total Cardan gotta: Tak for exposure for to																					
			Absorbed dose for non-carcinogens	DAD _{ec}	mg/kg-d		6.349325-1				5.84609E-08					7.99656E-10			2.29516E-09	6.52951E-10	7 11907E-11		9.39614E-12	1 13402E-11
			Dermal Reference Dose	RfD _{der}	mg/kg-d		6.00E-0										2.00E-03				1.00E-04	7.00E-05		
			Hazard Quotient	HQ	mg/kg-d		1.05822E-0	9 4.700446-08	5.90377E-08	2.20725E-05	5.84609E-06	9,32587E-09	1.76059E-07	0.000112765	9.8209E-05	7.99656E-06	4.24096E-07	, 0	4.59033E-07		7.11907E-07	0		
			Total Hazard Index	<u>HI</u>	mg/kg-d																			
		Carcinogenic risk - all routes (detect	ted organics)																					
		Carcinogenic risk - all routes (undete	ected organics)																					
		TOTAL CARCINOGENIC RISK - ALL RO		Sum Rt	fraction		6.33E-0	7 2.03E-07	0.00E+00	0 00E+00	0.00E+00	5.676-07	4.07E-08	0.00E+00	3.235-05	2.02E-08	3.04E-06	9.77E-06	0 00E+00	1.02E-06	0 00E+00	2.135-06	7.81E-07	9 42E-07
		Non-Carcinogenic risk - all routes (de Non-Carcinogenic risk - all routes (ur																						
		TOTAL NON-CARCINOGENIC HAZAR		Sum HI	fraction		0.00011069	7 0.00184942	0 00841963	0.052773483	12 04632955	0.043627133	0.034575128	0 132958229	0 192637715	0.214447013	0 025812968	0.017004619	0.050281315	0	0 1302624	0 146849318	0	
		- THE CHOIL CHUCK IS TO THE PARK								3100														

Notes

1 ug/l = micrograms per Liber

2- ug/m3 = micrograms per cubic merher

3- tv/d = hous per day

4- Vd = Bess per day

4- Vd = Bess per day

5- dly = days per year

6- y = year

7- kg = bilogram

8- d = day

9- hr = hour

10- mg/kg-d = milligrams per idogram per day

11 kg-d/mg = bilograms per day per milligram

12- cm2 = square certifinetier

13- ms/hr = cubic meter per hour

14- mg/m3 = milligrams per cubic meter

15- mg/cm3-evend = milligrams per square certifinetier per evend

16- mg/cm3-evend = milligrams per cubic certifinetier per evend

TABLE 7-17
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

																	· · · · · · · · ·										ECIRIC WOR
														_	G	hemicals of Pa	tentici Conce	m									
Exposure Route	Parameter	Symbol	Units	Aroctor-1242	Aroctor-1248	Aroclor-1254	Aroctor-1260 (Filtered)	Ветделе	Berzzz(a)anfhracene	Berzo(a)pyrene	Benzo(b)fluoranihene	Berzo(k) fluoranthene	bs(2-Chloroefftyf) Effner	bis (2-Chlorobopropy)) Ethe	Bs (2-ethythexyl phthodote)	Bromodichloromethane	Carbon Tetrachlaride	Chlorobenzene	Chlorodbromomethane	Chloroform	D&enzo(a,h)Anthracene	Dibenzofuran	Hexachloro-1,3-Butadiene	Hexachlorobenzene	indeno(1,2,3-cd)Pyrene	2-meftytnapthalene	
· · · · · · · · · · · · · · · · · · ·	A Little from behavior on acceleration			2.07169E-05		2 27004E A6	0.000932262	0.012007014			0.000252885	^	0,001243016	0		0.000517000	A / / FP IF A4	0.435306871	404/075 05	a ann (name)		* 500170016		0.0001.0000		0100000	
	Average tritake from Inhalation non-carcinogens Inhalation Reference Dose Hazard Guotient Total Hazard Index	RfD _m HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	20/10/1-00		2276000-00	0.0007-3.22-0.2	8.57E-03 1.516594684			0.000232063	v	0,001243016			0,000317723	2.000010-00	1,70E-02 25.60628654	4.24697E-05	0.002693201		0.000170915	0,000154341	0.000153305		9.14058E-Q5	8.57E
ncidental ingestion of creek water	POE concentration		ug/l	1.71027E-07	1 11168E-07	1.88136-07	7.696715-06	0.003648704	1.214295-06	1 12878E-06	9.18887F-09	5.26519F-09	0.005342537	0.000774668	0.000205282	0.002226	3.4596E-05	1 35954242	0.000189597	0.011575497	4 889115.00	1 41097E-06	1 274155-04	4.004425-04	5 24510E.00	0.0001186	0.001433
COSTIGUE DESIGNATION COSTA WOLLD	POE concentration	c.	mg/m3		1 11168E-07			0.003648704								0.002226						1.41097E-06					
	Water ingestion rate	IR .	Vd									5.255 17 2 51		2,000,7,1002		***************************************		120,000	VIII-02000	0.2 1 104 0 477	4.00/1/2-0/	174101712-00	1204102-00	7200-121-00	0200171-07	0.0001100	0.001.400
	Exposure frequency	EF	d/y																								
	Exposure duration	ED	y																								
	Body weight	BW	kg																								
	Averaging time carcinogers	AT _e	ď																								
	Averaging firme non-carcinogens	Aīn _e	d																								
	Average intake from ingestion caranogens	L	mg/kg-d	6.96157E-15	4.52502E-15	7.65772E-15			494271E-14		3.71993E-16			3.153256-11	8.353886-12	9.06082E-11	1.408216-12	5.53403E-08	7.43006E-12	4.71175E-10	1.990098-16	6.74329E-14	5 18637E-14	1.63079E-13	2.14317E-16	4.82755E-12	5.834028
	Ingestion Cancer Slope Factor	CSF,	kg-d/mg	4.00E-01	4.00E-01	4.00E-01	4.006-01	5.508-02	7.30E-01	7,30E+00	7.306-01	7.30E-02			1.40E-02	6,20E-02	1,305-01		8,406-02		7.30E+00		7.80E-02		7.306-01		
	Risk	R	fraction	2. 78 E-15	1,81E-15	3.06E-15	1.25E-13	8.17E-12	3.61E-14	3.35E-13	2.72E-16	1.56E-17	2.39E-10		1 17E-13	5.62E-12	1.836-13		6.24E-13		1.45E-15	;	4.05E-15	2.61E-13	1.56E-16		
	Total carcinogenic risk for exposure route	R,	fraction																								
	Average intake from ingestion non-carcinogens	Ļ	mg/kg-d	8.12183E-14	5.27919E-14	8 93401E-14	3.65482E-12	1.73272E-09	5.7665E-13	5.36041E-13	4.33992E-15	2.50037E-15	2.53716-09	3.47879E-10	9.74619E-11	1.0571E-09	1.64291E-11	6.45637E-07	8.66841E-11	5.49704E-09	2.32177E-15	6.70051E-13	6.05076E-13	1 90259E-12	2.50037E-15	5.63215E-11	6.806368
	Ingestion Reference Dose	RfD.	mg/kg-d			2.005-05		4.00E-03						4.00E-02		2.00E-02	7.00E-04			1.00E-02		4.00E-03	2.00E-04	8.00E-04		4.006-03	2.008
	Hazard Guotient	HQ	mg/kg-d			4.467E-09		4.33179E-07						9 196976-09	4.8731E-09	5.285485-08	2.34702E-08	3.22819E-05	4.3342E-09	5.49704E-07		1.67513E-10	3.02538E-09	2.37824E-09		1.40804E-08	3.40318E
	Total Hazard Index	HI	mg/kg-d																								
Dermal contact with creek water	POE concentration	C.	ug/l	1.7 1027E-07	1.111685-07	1.8813E-07	7.69621E-06	0.003648704	1.214295-06	1.12878E-06	9.13887E-09	5.26519E-09	0.006342537	0.000774668	0.000205232	0.002226	3,4596E-05	1.35756262	0.000182537	0.011575497	4.88911E-09	1.410975-06	1.27415E-06	4.00642E-06	5.26519E-09	0.0001186	0.001433
	event duration	tevent	hr	2011005 10	£ £1,505.10	1 401055 10	# 70/17F 10	/ FO / F 10	0.130.44E.10	F 0/FFTF 10	4 7/1755 14			1 550000 10												_	
	absorbed dose per event	Doeveni EV	t mg/cm2-even events/day	7.911586-13	0.51653E-13	1.461956-12	3.786175-10	1,365346-10	3 1/8440-12	3.06537E-12	4.161/3E-14	2.363465-14	3.17633E-11	1.550/86-10	0.020606-11	3.//8/15-11	1.99 165£-12	1.07/526-0/	2.8797E-12	2.345036-10	3.40744E-14	5.240286-13	6.380381-13	3.86609E-12	2.49869E-14	0	2.00333E
	Event frequency Exposure duration	ED	evenis/outy																								
	Exposure frequency	EF	d/v																								
	Skin surface area	SA	cm2																								
	Body weight	BW	ka																								
	Averaging time	AT	d/y																								
	Averaging time non-carcinogens	ATn _e	ď																								
	Absorbed dose for carcinogens	DAD	mg/kg-d	4.25089E-12	2.96403E-12	7.96249E-12	2.03431E-09	7.33597E-10	1.70778E-11	2.72173E-11	2.236115-13	1.26989E-13	1.70664E-10	8.33234E-10	3.50688E-10	2.0303E-10	1.070116-11	5.78949E-07	1.54726E-11	1.25998E-09	1.83082E-13	2.8156E-12	3.42817E-12	2.07725E-11	1.34255E-13	o	1.076 3 9E
	Dermal Cancer Slope Factor	CSF ₄₄₄	kg-d/mg	4.00E-01	4,00E-03	4.00E-01	4.00E-01	5.50E-02	2,356-01	2.35E+00	2.30E-02	7.30E-02	1 10E+00	-	1.40E-02	6.20E-02			8.40E-02		7.30E+00		7.80E-02			•	
	Risk	R	traction	1. 70E-1 2	1 19E-12	3 186-12	8 14E-10	4.03E-11	4.01E-12	6 40E-11	5.14E-15	9.27E-15			491E-12	1.26E-11	1.39E-12		1.30E-12		1.34E-12		2.67E-13				
	Total carcinogenic risk for exposure route	R,	traction																								
	Absorbed dose for non-carcinogens	DAD	mg/kg-d	4 95937E-11	3.45803E-11	9.28958E-11	2.37336E-08	8.55864E-09	1 9924E-10	3 17535E-10	2.60879E-12	1 48154E-12	1 99 108 E-09	9.72106E-09	4.09136E-09	2.368685-09	1.24846E-10	6.7544E-06	1.80514E-10	1.46998E-08	2 13595E-12	3.28486E-11	3.99954E-11	2.42345E-10	1.5663E-12	٥	1.25579E
	Dermai Reference Dose	RfD	mg/kg-d	•		2.00E-05		4.00E-03						4.00E-02		2.00E-02			-			4.00E-03				4.00E-03	
	Hazard Quotient	HQ	mg/kg-d			4.64479E-06		2.13966E-06						2.43026E-07	1.07667E-06	1.18434E-07	1.78352E-07	0.00108942	9.0257E-09	7.3499E-06			1.99977E-07				6.278945
	Total Hazard Index	HI	mg/kg-d																								
Carcinogenic risk - all routes (detect	ed organics)																										
carcinogenic risk - all routes (undete	cted organics)	55	- Cartes	3.89E-06	0.015.43	1 / 4 F A /	1 405 00	4.44E-05	9 01E-06	1.815.4	1 195-05	9 A 7 E A 7	1 49E A 4	A 60E-00	1475 87	EANERY	1 005 44	A AAF : AA	/ F.V EA	1 A4P	7 / 6 / 2 .	A 887:44	· , YAF * .		1	A AAF	- A 85-
OTAL CARCINOGENIC RISK - ALL RO Von-Carcinogenic risk - all routes (de		SUM KT	fraction	3.572-06	2.21E-06	6.64E-06	1 49E-03	4.446-05	7012-06	1.31E-04	1 175-05	3 976-06	1.47E-04	0 00E+00	1.476-05	5.898-07	1 935-07	0 00€+00	6.518-06	1.878-05	5.63E-04	0 00E+00	1.70E-06	4 41E-05	1 446-05	0.00E+00	0.00E+
ion-Carcinogenic risk - all routes (un	ndetected organics)																										
OTAL NON-CARCINOGENIC HAZARI	DINDEX - ALL ROUTES	Sum HI	fraction	0	0	8.537250358	0	2.260469962	0				0	0.001729539	2 173180576	0.005545353	0.009537899	34.82439968	0.00045236	0.076913003		0.023172374	0.510945735	0.209252755	0	0.004534032	1,3068149

TABLE 7-17
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

						C+	ernicals of Pol	enhal Concer	n		
					ţ						
					n-propykamir	2	2			- 1	
					Ş.	horophenol	rochloroethe	8		- [
				Ě	g.	Ē	8		Ş	- 1	•
				obenzane	₹	₹	웆	ğ	Chloride	- 1	\$
				2	ğ	튙	ğ	chloroethe	ž	g	200
Exposure Route	Parameter	Symbol	Units		ž	<u></u>		<u></u>		<u>_</u>	
	Average intake from inhalation non-carcinogens	l,	mg/kg-d	0.000119327	0	0	0.001391868	0.003737425	7.56168E-05	- 1	
	Inhalation Reference Date	RfD _{bak}	mg/kg-d	571E-04			1.40E-01	1 145-02	2.866-02	1	
	Hazard Quotient	HQ	mg/kg-d	0.208978893			0.009941918	0.327844268	0.002643944	- 1	
	Total Hazard Index	HI	mg/kg-d							· VIII	599
ncidental Ingestion of creek water	POE concentration	c.	ug/l	0.000154858	0.007212425	7.73042E-06	0.000841116	0.029336582	0.000325004	- 1	
	POE concentration	c_	mg/m3		0.007212425						
	Water ingestion rate	IR .	Vd							- 1	
	Exposure frequency	EF	d/y							1	
	Exposure duration	ED	y								
	Body weight	BW	kg								
	Averaging time carcinogens	AT.	d								
	Averaging time non-carcinogers	ATn _e	d								
	Average intake from ingestion carcinogens	L	mg/kg-d	6.30342F-12	2.93578E-10	3 144435-13	3.423725-11	1.19413E-09	1.322915-11		
	Ingestion Cancer Slope Factor	CSF.	ka-d/ma	V2	7 00E+00	1,206-01	5.40E-01	4.00E-01	7.20E-01	i i	
	Risk	R	fraction		2.06E-09	3.78E-14	1.85E-11	4.78E-10	9.52E-12	1	
	Total carcinogenic risk for exposure route	R,	fraction					45 05 15	7[1.200 cm	0
	Average high from brandon and amphosons			7 9E/E 11	9 202007 00	9 /71075 10	2 00/2/5 10	1 000155 00	150510		
	Average intake from ingestion non-carcinogens	ا. RfD₀	mg/kg-d		3.42508E-09				1.5434E-10		
	Ingestion Reference Dose	HQ.	mg/kg-d	5.00E-04		3.00E-02	1.00E-02	3.00E-04	3.00E-03		
	Hazard Quotient Total Hazard Index	HI	mg/kg-d mg/kg-d	1,4708E-07		1.223675-10	3.99434E-08	4.64384E-05	5 1446/2-08	7) X 50	05
		_									
Dermal contact with creek water	POE concentration	C.	u g/ 1	9,000154858	0.007212425	7.730425-06	0.000841116	0.029336582	0.000325004	- 1	
	event duration absorbed dose per event	tevent Doevent	hr	0.58/355.10	C 07010F 11	1 005 (05 11	104/005 10	10//005 00			
	Event frequency	EV	mg/cm2-even events/day	2.326/36-12	3.2/Y12E-11	1.935431-11	1,040335-10	1,000075-07	4.460635-12	- [
	Exposure duration	ED	Y								
	Exposure frequency	EF	d/y								
	Skin surface area	SA.	cm2							1	
	Body weight	BW	ka							1	
	Averaging firms	AT	d/y								
	Averaging time non-carcinogens	ATn _e	ď								
	Absorbed dose for carcinogens	DAD	mg/kg-d	1 257425_11	2.83647E-10	1 090015.10	£ 42105E_10	6 79070E.00	2.3968E-11		
	Dermal Cancer Slope Factor	CSF	kg-d/mg	1,557 021-11	1.80E+00	1.206-01	5.40E-01	6.00E-02	7.205-01		
	Rsk	R	fraction		5 1 1E-10	1.25E-11	3.04E-10	3,44E-10	1.73E-11	i i	
	Total carcinogenic risk for exposure route	Ř,	fraction		311510	1220	3346-10	3,440-10	1730-11	851£-09	0
		D								1	
	Absorbed dose for non-carcinogens	DAD _{me}	mg/kg-d		3.309215-09			6.68592E-08			
	Dermai Reference Dose Hazard Quotient	RfD _{der} HQ	mg/kg-d	5.00E-04 3 16778E-07		3.00E-02 4.04408E-08	1.00E-02	4.50E-05	3.00E-03 9.32089E-08	- 1	
	Total Hazard Index	HQ:	mg/kg-d mg/kg-d	3 10//BE-0/		4344005-05	0,230741-0/	0.001485759	1.3200YE-08	2860	05
											
arcinogenic risk - all routes (detecte arcinogenic risk - all routes (undetec										2.38E-03 8.25E-04	
OTAL CARCINOGENIC RISK - ALL ROLL		\$um Rt	fraction	0 00E+00	2.01E-04	2.426-05	2.71E-04	1.55E-04	1 17E-06	3.22E-03	
on-Carcinogenic risk - all routes (det					-2.5					5.87E+01	
ion-Carcinogenic risk - all routes (und	ietected organics)									1.01E+01	
OYAL NON-CARCINOGENIC HAZARD		Sum HI	fraction	0.259702702		A 44444		5 469495859		6.89E+01	

TABLE 7-18
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

			 													Chemicals	of Potential C	oncern							
Source Medium E	Exposure Medium	Ефозиле Роіпі	Exposure Route	Parameter	Symbol	Units	Non Contominant- Specific Porameters	1,1,2,2-Tettachloroethane	1,1 2-Tichleroethane	1 -Dictioneffiche	Total 1 2 Dichloroethene	1 2.4 Trichlorobergene	1,2-Dichloroethane	1 2-Dichlaropropane	1,3-Dichloroberzene	1 4-Dichloroberzene	2,4,6-Inchlorophenol	2 4-Dinitrototuene	2 6-Dinitrotokuene	2-Chlarophenol	3,3-Dichlaroberadine	4 6-Dinitro-2-Methyl Phenol	Aroctor-1016	Aractor-1221	Ameriye.] 232
Groundwater	Alt	indoor air	Vapour Intrusion - Inhakation	POE concentration POE concentration Inholation rate Exposure time Exposure traquency Exposure duration Body weight Averaging time carcinagers Averaging time non-carcinagers	Con Con IR ET ED BW ATa	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25.550 2.190	7.59E-06 7.59E-09	9.30E-05 9.30E-08		7 42E-03 7.42E-06		1.926-04 1.926-07	1.06E-04 1.06E-07	8.905-03 8.906-06	&165-03 &165-06	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	3.06E-04 3.06E-07	0.00E+00 0.00E+00	0.00E+00 0.00E+00	6.76E-08 6.76E-11	0 00E+00 0.00E+00	
				Average intake from inhalation caranogens inhalation Cancer Sope Factor Risk Total carainogenic risk for exposure route	L CSF _{MA} R R _t	mg/kg-d kg-d/mg fraction fraction		4.19218E-10 2.03E-01 8.51E-11	5.13666E-09 5.70E-02 2.93E-10	1.25379E-07	4 098285-07	2.25902E-07	1.06047E-08 9.10E-02 9.65E-10	5.85468E-09	4.915736-07	3.40235E-07 2.20E-02 7.49E-09	0 1.09E-02 0.00E+00	0	0	1 69013E-08	0	0	3.733745-12 4.006-01 1.496-12	0 4 00E-01 0 00E+00	
				Average intake from inhalation non-caranogens inhalation Reference Dose Hazard Quoffent Total Hazard Index	RFD _{MA} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4.89087E-09	5.99277E-08	1.46275E-06	4 78133E-06	2.63553E-06 1 14E-03 0.002311867	1.23722E-07 1.40E-03 8.83726E-05	1 14E-03	5.73501E-06	3 9694E-06 2.30E-01 1 72583E-05	0	0	Ò	1 97181E-07	0	0	4.35603E-11	0	0
	Groundwater	Tap Water	ingestion of tap water	POE concentration POE concentration Water Ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT., ATn.,	ug/i mg/m3 t/d d/y y kg d d	1 350 6 15 25,550 2,190	0.09259 0.09259	0.106095 0.106095	12.214 12.214	7.58 7.58		0 18647 0 18647	0.099665 0.099665	32.98 32.98	39.23 39.23	0.19306 0.19306	0.761955 0.761955	0.266 0.266	3.546 3.546	0.29747 0.29747	0 19109 0 19109	0.1608 0.1608	0.093235 0.093235	
				Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R	mg/kg-d kg-d/mg fraction fraction		5.07342E-07 2.00E-01 1.01E-07	5.81342E-07 5.70E-02 3.31E-08		4 153426-05	0.0007222082	1.02175E-06 9 10E-02 9.30E-08	5.4611E-07 6.80E-02 3.71E-08	0.000180712	0.000214959 2.40E-02 5.16E-06	1.05786E-06 1 10E-02 1 16E-08	4.1751E-06 6.80E-01 2.84E-06	1.45753E-06 6.70E+00 9.77E-06	1 94301E-05	1.629975-06 4.505-01 7.335-07	1.04707E-06	8.81094E-07 4.00E-01 3.52E-07	5.10877E-07 4.00E-01 2.04E-07	4.00E-0
=	.			Average intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	L RTD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	4.00E-03	0.000780804 1 00E-01 0.007808037	1.00E-02	1.00E-02	2.00E-02	6.37128E-06 1.10E-03 0.005792071	0.002108311 3.00E-02 0.070277017	0.002507854 3.006-02 0.083595129	1.00E-04	4.87095E-05 2.00E-03 0.024354726	1.00E-03	0 000226685 5.00E-03 0.045336986	1 901638-05	1.22158E-05 1.00E-04 0.122157991	1.02795E-05 7.00E-05 0.146849315	5.96023E-06	7 19338E-0
			Dermal contact with tap water	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	Cw tevent Daeven EV ED EF SA BW AT ATn _o	ug/l hr mg/cm2-evel events/day y d/y cm2 kg d/y d	1 6 350 6,60 15 25,550 2,190	0.09259 1 71293E-09	0 106095 1.45785E-09	12-214 1 449365-07	7.58 1.01602E-07		0.18647 1.3784E-09	0.099665 1.44735E-09	32.98 4.448555-06	39.23 3.83727E-06	0 19306 2.1 <i>57</i> 32E-08	0.761955 6.90925E-09	0.266 0	3.546 5.85864E-08	0.29747 1.76154E-08	0.19109 1.92059E-09	0.1608 0	0.093235 3.9849E-08	
				Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for expasure route	DAD _o CSF _{eer} R R ₄	mg/kg-cl kg-cl/mg fraction fraction		6.194696-08 2.00E-01 1.24E-08	5.70E-02		3.6743 9E- 06	0,000282986	4 98495-08 9 105-02 4.545-09	5.23424E-08 6.80E-02 3.56E-09	0.000160829	0.000138773 2.40E-02 3.33E-06	7.80182E-07 1.10E-02 8.58E-09	2.49869E-07 8.00E-01 2.00E-07	0 6.70E+00 0.00E+00	2.118745-06	6.37049E-07 4.50E-01 2.87E-07	6.9457E-08	0 4.00E-01 0.00E+00	1 44112E-06 4 00E-01 5.76E-07	4.00E-0
				Absorbed date for non-carcinogens Dermal Reference Date Hazard Quotient Total Hazard Index	DAD _{se} RfD _{se} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02			1.00E-02		2.006-02	1 105-03	3.006-02	3.00E-02		2.006-03	1.00E-03	2.47186E-05 5.00E-03 0.004943729		8.10332E-07 1 00E-04 0.008103318	7 00E-05 0	1.68136-05	2.02916E-0
(only calculated fo	Air or COPC with Henry	indoor Air /s Law > 1e-5 atm.m3/	Vapors from tap water 'mol, those with a "y")	Concentration in tap water Concentration in tap water Volatilization factor POE concentration Inhabition rate Exposure time Exposure time Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., VF C. C. C. IR ET ED BW AT., ATIN,	ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d d	0.0005 y 0.42 24 330 6 15 25.550 2.190		0.106095 0.106095 y 5.30475E-05	12.214 Y y	7.58 7.58 , 0.00379	40 53 y	0.18647 0.18647 0.000093235	0.099665 0.099665 4 98325E-05	32.98 32.98 9 0.01649	,	0 19306 0.19306 0	0.761955 0.761955 0	0.266 0.266 0	3.546 3.546 y 0.001773	0.29747 0.29747 0	0.19109 0.19109 0	0 1608 0 1608 7 0.0000804	0.093235 0.093235 0	
				Average intake from inhalation caranogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _{inh} R R _t	mg/kg-d kg-d/mg fraction fraction		2.55701E-06 2.03E-01 5.19E-07	5 706-02		0.000209333	0.001119294	5.14964E-06 9 10E-02 4.69E-07	2.75239E-06	0.00091079	0.001083393 2.20E-02 2.38E-05	0 1,09E-02 0.00E+00	0	0	9 79279E-05	0	0	4 44072E-06 4.00E-01 1.78E-06	0 4.00E-01 0.00E+00	0 4.00E-01 0.00E+00

TABLE 7-18
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL B)
MICROBIA RECTRIC MORES

													_		- 0	nemicals of Pol	ential Conce	n									
Exposure Route	Parameter	Symbol	Units	Arockir-1242	Aroctor-1248	Aroctor-1254	Aroctor-1260 (Filtered)	Ветгета	Benzo (a) anthracene	Berzo (a) pyrene	Benzo(b)fluoranthene	Berzo (k) fluoranthene	Ds(2-Chicroethy) Ether	Db(2-Chlorokopropyl) Ether	B6 (2-ethythexyl phthalate)	Bromodichioromethane	Carbon Tetrachloride	Chloroberzane	Chlorodibromomethane	Chloroform	Diberzo(a.h) Anthracene	Dibenzofuran	Hexachloro-1,3-Butadiene	Hexachior obenzene	Indeno(12,3-cd)Pyrene	2-methytnapthatene	
Vapour Intrusion - Inhatation	POE concentration POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Con RET EF ED BW ATO ATO	ug/m3 mg/m3 m3/hr h/d d/y y kg d	3.48E-08 3.48E-11	0.00E+00 0 00E+00	5.00E-08 5.00E-11	2.085-04 2.085-09	2.175-03 2.175-06	0.00E+00 0.00E+00	0.00E+00 0.00E+00	5.21E-08 5.21E-11	0.00E+00 0.00E+00	4.11E-04 4.11E-07	0.00E+00 0.00E+00	0.00E+00	1.206-03 1.206-06	3.04E-05 3.04E-08	1 52E+00 1.52E-03	9.87E-05 9.87E-08	1.13E-02 1.13E-05	0.00E+00		7 485-07 7.485-10	1.20£-06 1.20£-09	0.00E+00 0.00E+00	2.19E-05 2.19E-08	
	Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	CSF _{am} , R R,	mg/kg-d kg-d/mg fraction fraction mg/kg-d	1 9221E-12 4 00E-01 7.69E-13	4.00E-01 0.00E+00	4.00E-01 1.10E-12	1 14884E-10 4 00E-01 4.60E-11	1 19855E-07 2.73E-02 3.27E-09	3.08E-01 0.00E+00	3.08E+00 0.00E+00	2.87763E-12 3.08E-01 8.86E-13 3.35724E-11	3.08E-01 0.00E+00	2.27007E-08 1 16E+00 2.63E-08 2.64842E-07	0	0	6.62795E-08	1 67908E-09 5.20E-02 8.73E-11	8.3954E-05 0.000979463	5.45148E-09	6.241325-07 8.106-02 5.066-08	3.08E-01 0.00E+00	1 79507E-08	7 70E-02 3.18E-12	6.62795E-11 1 61E+00 1.07E-10	0 3.08E-01 0.00E+00	1.20965-09	
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	RFD _{een} HQ HI	mg/kg-d mg/kg-d mg/kg-d	224243011		3.221720-11		8.57E-03 0 000163164			333524011	·	2.0*0420-07			7.7328007	1730731200	1 70E-02 0.057615471	6.3800/1200	7.28133006		2.09425E-07	4,519996-10	7 7326E-10		141125-08	1.77205E-0 8.57E-0 0.00020677
ingestion of top water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., IR EF ED BW AT., ATn,	ug/t mg/m3 Vd d/y y kg d d	0.0643 0.0643	0.041795 0.041795	0.07073 0.07073	2.8735 2.8735	40.34 40.34	0.45653 0.45653	0.42438 0.42438	0.78489 0.78489	0.4522 0.4522	3.858 3.858	0.55941 0.55941	77.16 77.16		0.08274 0.08274	1351.08 1351.08	Q.131815 Q.131815	8.359 8.359	0.4199 0.4199	0.530475 0.530475	0.479035 0.479035	0.47582 0.47582	0 4522 0.4522	0.2837 0.2837	3.4276 3.4276
	Average Intake from Ingestion carcinogens Ingestion Cancer Stope Factor Risk Total carcinogenic risk for exposure route	L CSF. R R,	mg/kg-d kg-d/mg fraction fraction	3.52329E-07 4.00E-01 1.41E-07	2.29014E-07 4.00E-01 9.16E-08	3.87562E-07 4 00E-01 1.55E-07	1.58548E-05 4.00E-01 6.34E-06	0.000221041 5.50E-02 1.22E-05	2.50153E-06 7.30E-01 1.63E-06	2.32537E-06 7.30E+00 1.70E-05	4.30077E-06 7.30E-01 3.14E-06	2.47781E-06 7.30E-02 1,81E-07	2.11397E-05 1.10E+00 2.33E-05	3.06526E-06	0.000422795 1 406-02 5.926-06		4.5337E-07 1.30E-01 5.89E-08	0.007403178	7.22274E-07 8.40E-02 6.07E-08	4.58027E-05	2.300825-06 7.305+00 1.685-05	290671E-06	2.62485E-06 7.80E-02 2.05E-07	2.60723E-06 1.60E+00 4 17E-06	2.47781E-06 7.30E-01 1.81E-06	1.554525-06	1.878255-0
	Average Intake from Ingestion non-carcinogens Ingestion Reference Dose Hazarrd Quotient Total Hazarrd Index	IL RfD ₆ HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	4 1105E-06		4.52155E-06 2.00E-05 0.226077626	0.000184973	0.002578813 4.00E-03 0.644703196	2.91846E-05	2.712936-05	5 01756E-05	2.89078E-05	0 00024663	3 57614E-05 4.00E-02 0 000894034	2.005-02	2.00E-02	5.28932E-06 7.00E-04 0.007556164	2.00E-02	2.00E-02	0.000534365 1.00E-02 0.05343653	2.68429E-05	3.39116E-05 4.00E-03 0.008477911	3.062325-05 2.00E-04 0.15311621	8.00E-04		4.00E-03	
Dermal contact with tap water	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sich surface area Body weight Averaging time Averaging time non-carcinogens	Cw tevent Daever EV ED EF SA BW AT ATn ₆	ug/l hr fr mg/cm2-ever events/day y d/y cm2 kg d/y d	0.0643 2.10327E-07	0.041795 1 46655E-07	0.07073 3.93971E-07	2.8935 0.000100654	40.34 9.386326-07	0.45653 8.44979E-07	0.42438 1.34667E-06	0.78489 2.527425-06	0.4522 1.43532E-06	3.858 1.55725E-08	0.55941 7 9 1863E-08	77.16 1.73515E-05		0.08274 3.28754E-09	1351.08 7 113545-05	0.131815 1.470445-09	8.359 1.11247E-07	0.4199 2.06933E-06	0.530475 1.39311E-07	0.47903S 1 6962E-07	0.47 <i>5</i> 82 3.2467E-07	0.4522 1.51745E-06	0.2837 0	3.4278 3.298825-07
	Absorbed dose for carchagens Dermal Cancer Slope Factor Risk Total carchagenic risk for exposure route	DAD. CSF. R R,	mg/kg-d kg-d/mg fraction fraction	7.60634E-06 4.00E-01 3.04E-06	5.3037E-06 4.00E-01 2.12E-06	1.42477E-05 4 00E-01 5.70E-06	0.003640096 4.00E-01 1.46E-03	3.3945E-05 5.50E-02 1.87E-06	3.05581E-05 2.35E-01 7 18E-06	4.87013E-05 2.35E+00 1 14E-04	9 14026E-05 2.30E-02 2.10E-06	5.19076E-05 7.306-02 3.795-06	5.6317E-07 1 10E+00 6.19E-07	2.863725-06	0.000627505 1.40E-02 8.79E-06	6.205-02	1 188925-07 1.305-01 1.555-08	0.002572569	5.31776E-08 8.40E-02 4.47E-09	4.023186-06	7 4836E-05 7.30E+00 5 46E-04		6.13422E-06 7.80E-02 4.78E-07	1.17415E-05 1 60E+00 1.88E-05	5.48776E-05 2.30E-01 1.26E-05	0	1.1935-05
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{ne} RfD _{ow} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	8.87407E-05	6 18764E-05	0.000166223 2.00E-05 8.311168083	0.042467786	0 000396025 4.00E-03 0 099006346	0.000356512	0.000568182	0 001066363	0.000605589	6.570325-06	4.00E-02	3.80E-03		7,00E-04	6.20E-03	2.00E-02	2.00E-03	0 000873087	5.87778E-05 4.00E-03 0.014694455	2.00E-04	8.00E-04	0 000640239	4,00E-03	0.000139183 2.006-02 0.006959146
Vapas from tap water tol. those with a "V"]	Concentration in top water Concentration in top water Volatilization factor POE concentration Inhalation rate Exposure time Exposure frequency Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C. WF C. Map VF C. Map IRT EF ED BW AT. A. A. A. A. A. A. A. A. A. A. A. A. A.	ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d	0.0643 0 0643 7 0.00003215	0.041795 0.041795 0	0.07073 0.07073 0.000035365	2.8935 2.8935 0.00144675	40.34 40.34 7 0.02017	0.45653 0.45653 0	0.42438 0.42438 0	0 78489 0 78489 0.000392445	0.4522 0.4522 0	3.858 3.858 0.001929	0.55941 0.55941 0	77.16 77 16 0	1.6075 Y	0 06274 0 08274 0 00004137	1351.08 1351.08 7 0.67554	0.131815 0.131815 6.59075E-05	8.359 8.359 7 0.0041795	0.4199 0.4199 0		0.479035 0.479035 0.000239518	0.47582 0.47582 0.00023791	0.4522 0.4522 0.4522 y	0.2837 0.2837 0.00014185	3.4278 3.4278 3.4278 9 0.0017139
	Average intake from inhalation carcinogens Inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _m R R	mg/kg-d kg-d/mg fraction fraction	1 77574E-06 4.00E-01 7 10E-07	0 4.006-01 0.006+00	1 95331E-06 4.00E-01 7.81E-07	7 990825-05 4 005-01 3.205-05	0 001114047 2.73E-02 3.04E-05	0 3.08E-01 0.00E+00	0 3.08E+00 0.00E+00	2.16759E-05 3.08E-01 6.68E-06	0 3.08E-01 0.00E+00	0.000106544 1 16E+00 1.24E-04	0	0	4.43934E-05	2.28498E-06 5.20E-02 1.19E-07	0.037312018	3.64026E-06	0.000230846 8.10E-02 1.87E-05	0 3.08E-01 0.00E+00	1.46498E-05	1.322925-05 7 705-02 1.025-06	1.31405E-05 1 61E+00 2.12E-05	0 3.08E-01 0.00E+00	7.83478E-06	9 46636E-05

TABLE 7-18
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

						G#		ential Concer	•	ļ	
Exposure Route	Parameter	Symbol	Units	Niroberzene	Nitrosod-n-propytamine	Pentochlorophenol	Tetrachiacoethene	Trichloroethene	VTryl Chloride	b do	
											
Vapour intrusion - inhalation	POE concentration POE concentration	Con Con	ug/m3 mg/m3	6.87E-06 6.87E-09	0.00E+00	0.00E+00 0.00E+00	1.31E-03 1.31E-06	2.50E-02 2.50E-05	9.36E-04 9.36E-07		
	Inhalation rate	IR	m3/hr	20/20/	0.000.00	0.000.00	12100	20000	/2000/		
	Exposure time	ĒĪ	h/d							- 1	
	Exposure frequency	푱	ďγ							- 1	
	Exposure duration	£Ο	y								
	Body weight	BW	kg .								
	Averaging time carcinogens	AT _o	d								
	Averaging time non-carcinogens	Aîn _e	d								
	Average intoke from inhalation carcinogens	L L	mg/kg-d	3.7945E-10	0	0	7.23551E-08	1.390636.04	5.1698E-08		
	Inhalation Cancer Stope Factor	CSF	kg-d/mg	Z//-OC-10	•	•	2.10E+00	2.00E-02	3.00E-02	- 1	
	Risk	R	fraction				1.526-07	2.76E-08	1.555-09	1	
	Total caranogenic risk for exposure route	R,	fraction							2.796-07	
									_		
	Average intake from inhalation non-carcinogens	<u>ا</u>	mg/kg-d	4.42692E-09	0	0	8.44142E-07	1.61096E-05		- !	
	Inhalation Reference Dose	RfD _{re}	mg/kg-d	5.71E-04			1 40E-01	1 14E-02	2.86E-02	1	
	Hazard Quotient	HQ	mg/kg-d	7 752925-06			6.02959E-06	0.001413122	2.108896-05		
····	Total Hazard Index	ні	mg/kg-d							();;;	
Ingestion of top water	POE concentration	C.	ug/l	0.37036	5.2083	2,90636	4.32	11.6	0.234695	1	
rigonal or rep were	POE concentration	č.	mg/m3	0.37036	5.2083	2.90636	4.32	11.6	0.234695		
	Water Ingestion rate	IR	Vd								
	Exposure frequency	Œ	d/y							i	
	Exposure duration	ED	y							1	
	Body weight	BW	kg								
	Averaging time carcinogens	AT _o	d							ŀ	
	Averaging time non-carcinogens	ATn _e	d							1	
	Average intake from ingestion carcinogens	L .	mg/kg-d	2 020275 04	2 85284E.DE	1.59253E-05	22/7126.06	4 384145 NE	0.000001204	1	
	Ingestion Concer Stope Factor	Ç2£°	ka-d/ma	202/3/2-06	7 00E+00	1 205-01	5.40E-01	2.00E-02	7 20E-01	1	
	Risk	R	fraction		2.00E-04	1915-06	1.28E-05	1.27E-06	9.26E-07	1	
	Total carcinogenic risk for exposure route	Ř,	fraction							3.306.04	
	•								٠.		
	Average intake from ingestion non-carcinogers	l _o	mg/kg-d	2.3676E-05	0.000332951	0.000185795	0 000276164	0.000741553	1.50033E-05		
	Ingerfion Reference Dose	RfD _o	mg/kg-d	5.00E-04		3 00E-02	1.00E-02	3.00E-04	3.00E-03	ŀ	
	Hozard Quoflent	HQ	mg/kg-d	0.047351963		0 006193157	0.027616438	2.471841705	0.005001111	-	
	Total Hazard Index	ня	mg/kg-d							9 100-400	
Dermal contact with tap water	POÉ concentration	C.,	ug/l	0.37036	5.2083	2,90636	4.32	11.6	0.234695		
	event duration	tevent	hr	5.57 5.54						1	
	absorbed dose per event	Daeven		3.986125-09	2.54173E-08	5.14528E-06	3.8E-07	2.84437E-07	1.92945E-09	4	
	Event frequency	EV	events/day							1	
	Exposure duration	ED	γ.							l l	
	Exposure frequency Skin surface area	EF SA	d/y cm2								
	Body weight	BW	kg								
	Averaging time	AT	dy								
	Averaging time non-carcinogens	ATn _o	ď							J	
	Absorbed dose for carcinogens	DAD	mg/kg-d	1.44156E-07		0.000186076	1.37425E-05	1.02865E-05		- 1	
	Dermal Cancer Slope Factor	CSF _{der}	kg-d/mg		1.80E+00	1,206-01	5.40E-01	3.00E-03	7.20E-01	J	
	Risk Tetal cominguate titl for expert on my te	R	fraction fraction		1 65E-06	2.235-05	7.42E-06	3.09E-08	5.02E-08		
	Total carcinogenic risk for exposure route	R,	fraction						***	2,226-03	
	Absorbed clase for non-carcinogens	DAD	mg/kg-d	1 68181E-06	1.0724F-05	0 002170887	0 000160329	0.000120009	8.14068E-07		
	Dermal Reference Date	RfD _{obs}	mg/kg-d	5.00E-04	1307 242 40	3.00E-02	1.00E-02	4.50E-05	3.00E-03		
	Hozord Quohent	HQ	mg/kg-d	0.003363629				2.666864567		1	
	Total Hazard Index	н	mg/kg-d							1.91E+01	
		_							000.00		
Vapars from tap water	Concentration in top water	c.	ug/l	0.37036	5.2083	2,90636	4.32		0.234695	- 1	
	Concentration in top water	C _w Vf	mg/m3 dimensionless	0.37036	5.2083	2.90636	4.32		0.234695	1	
i, those with a "\")	Volatilization factor POE concentration	O-top	mg/m3	y 0.00018518	0		y 0.00216		y 0 00011 <i>7</i> 348	1	
A II AND WINI U Y I	Inhalation rate	IR IR	m3/hr	www.1031B	v	v	700210	V-VV-3D	J 17570	ł	
	Exposure fime	ĒÌ	h/d							J	
	Exposure frequency	Œ	ďγ							J	
	Exposure duration	ED	y							- 1	
	Body weight	BW	ko							J	
	Averaging time carcinogens	AT _o	ď							- 1	
	Averaging time non-carcinogens	ATn _a	d							1	
	A		man flow of	, ^^^~	_		0.00011000-	0.00000000	/ /01/// 0/	- 1	
	Average intake from inhalation carcinogens	P.	mg/kg-d	1.02286-05	0	0	0 000119303		6.48144E-06		
	Inhalation Cancer Slape Factor	C2F _{tra}	kg-d/mg				2.10E+00	2.005-02	3.00E-02 1 94E-07	ļ	
	Rhsk	R	fraction				2.515-04	6.41E-06	1 74E-U/		
	Total carcinogenic risk for exposure route	R,	fraction						r	£196-64	

TABLE 7-18 RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL B) MISSOURI ELECTRIC WORKS

	-						-	-								Chemicals	of Potential C	oncem				-		-	
Source Medium Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbol	Units	Non Contaminant- Specific Parameters	_	1 1,2,2-Tetrachloroethone	1,1,2-Thichkoroethane	1 1-Dichloroethane	Total 1,2 Dichloroethene	1,2,4 Trichlorobergene	1.2-Dichloroethane	1.2-Dichloroproporre	1,3-Dichloroberizene	1 4-Dichlorobergene	2 4,6-Tichlorophenol	2.4-Dhiltrotokene	2.6-Dhiltroioùene	2-Chlorophenol	3 3-Dicthorobenddine	4.6-Divitro-2-Methyl Phenol	Aroctor-1016	Mroclor-1221	İ
			Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quoffent Total Hazard Index	l, RfD _m , HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		2.983	8176-05 3.4	11829E-05	0.00393525	0.002442214	1 14E-03	6.00791E-05 1 40E-03 0.042913644	1 146-03	0.010625885	0.012639584 2.30E-01 0.054954711	0	0	0	0.001142492	0	0	5 180845-05	C	0
Surface Water	Creek	incidental ingestion of creek water		C.,, C.,, IR EF ED BW AT _c ATn ₀	ug/l mg/m3 Vd d/y y kg d		3.871 05 52 6 15 50	145E-05 0.1	.00014692 .00014692	0.005107025 0.005107025	0.168484251 0.168484251	0.003415705 0.003415705	0.000258223 0.000258223	0.000138016 0.000138016	0 <i>27723959</i> 2 0 <i>2772395</i> 92	0.332753253 0.332753253	8.07239E-05 8.07239E-05	0.001055151 0.001055151	0.0001112 0.0001112			7 99002E-05 7.99002E-05			7 2.992976-0 7 2.992976-0
			Average intake from Ingestion carcinogens Ingestion Concer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction		2.	.006-01	5.9803E-12 5.70E-02 3.41E-13	2.0787915-10	6.85907E-09	1.39035E-10	1.05108E-11 9 10E-02 9.56E-13		1.128495-08	1.35446E-08 2.40E-02 3.25E-10		6.806-01	6.70E+00	6.035196-11	5.06286E-12 4 50E-01 2.28E-12		1 74052E-14 4.00E-01 6.96E-15	1 009436-14 4.006-01 4.046-14	1 4,00E-0
			Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	RPD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6	.006-02	4.00E-03	2.42525E-09 1 00E-01 2.42525E-08	1.00E-02	1.00E-02			1.31657E-07 3.00E-02 4.38857E-06		1 005-04	2.00E-03		7 04106E-10 5.00E-03 1.40821E-07	5.90667E-11	1.006-04		1 17766E-13	1 421325-
		Dermal contact with creek water	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sich surface area Body weight Averaging time Averaging time non-carcinogens	Cw tevent Dasver ED EF SA BW AT ATn _o	ug/I hr thr mg/cm2-eve events/day y d/y cm2 kg d/y d	int 6.60	2 1 012 6 52 00 15 50									0.332753253 4.70013E-08						7.99002E-05 1.13569E-12			7 2.99297E-0 3 1.80907E-1
			Absorbed dose for carcinogens Dermal Cancer Sope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{dar} R R _t	mg/kg-d kg-d/mg fraction fraction		2		61158E-11 5.70E-02 9 19E-13	5.06038E-10	1,891936-08	5.01093E-09	1.59872E-11 9 10E-02 1.45E-12	6.80E-02	2.89968E-07	2.52537E-07 2.40E-02 6.06E-09	1 10E-02		6.70€+00	1.967285-10	5.59672E-11 4 50E-01 2.52E-11	6.10206E-12	0 4.00E-01 0 00E+00	8.05383E-13 4.00E-01 3.22E-13	
			Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{car} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6	.00E-02	4.00E-03		1.00E-02	1.006-02			3.006-02			2.00E-03	1.00E-03		6.52951E-10	7 119076-11 1.006-04 7 119076-07	7.00E-05 0	9.39614E-12	2 1 134026-
		Carcinogenic risk - all noutes (detection carcinogenic risk - all noutes (under 10TAL CARCINOGENIC RISK - ALL RX Non-Carcinogenic risk - all noutes (under 10TAL RISK - ALL RX Non-Carcinogenic risk - all noutes (under 10TAL INSK-CARCINOGENIC HAZAR	ected organics) DUTES letected organics) Indetected organics)		fraction				2.03E-07		0 00E+00					3.235-05				0.00€+00		0 00E+00		7.81E-07	7 9 426-0

Notes.

1 ug/l = micrograms per Liter
2 ug/m3 = micrograms per cubic meter
3- h/d = hours per do?
4 l/d = liters per do?
4 l/d = liters per do?
5 d/y = dorp per yeor
6-y = yeor
7 kg = idogram
8-d = doy
9 te = hour
10-mg/kg-d = milligrams per idiogram per doy
11 kg-d/mg = idiograms per doy per milligram
12 cm2 = square carritmeter
13-mg/kr = cubic meter per hour
14-mg/m3 = milligrams per cubic meter
15-mg/cm2-event = milligrams per square carritmeter per event
14-mg/cm3-event = milligrams per cubic carritmeter per event

TABLE 7-18
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

								·····	-							hemicals of P	otential Conce	m -									
Exposure Route	Parameler	_ Symbol	Units	Aroctor-1242	Aroctor-1248	Arocke-1254	Arocior-1260 (Filtered)	Вогиеле	Benzo(a) antfracene	Benzo(a)pyrene	Benzo(b)fluoranthene		56(2-Chloroethy)) Ether	bs(2-Chlarolsopropyt) Ethe	Bs (2-ethythexyl phithdidie)	Bromodichloromethane	Carbon Tetrachloride	Chlorobertzene	Chlorodibromomethane	Chlaroform	Dibenzo(a.h)Anthracene	Dberzofuran	Hexachkro-1,3-Butadene	Hexachlorobenzene	indeno(1,2,3-cd]Pyrene	2-methvings/halene	
	Average intake from inhalation non-carcinogens		mg/kg-d	2.071 <i>69</i> E-05	D	2.278865-05	0.000932262	0.012997216	0	0	0.000252885	0	0.001243016	Ď		0.000517923	2.665815-05	0.435306871	4.24697E-05	0.002693201		0.000170915	0.000154343	0.000153305		9 14058E-05	5 0 001104
	Inhalation Reference Dose	RfDm	ma/kg-d		_			8.57E-03	-	-		_		•	_			1.70E-02			-	3.003.73.10		0.000	•		8.57E
	Hazard Quotient	HQ	mg/kg-d					1.516594684										25.60628654									1.2886919
	Total Hazard Index	н	mg/kg-d		_										_												1.2000217
cidental Ingestion of creek water		C.,	ug/l	1.71027E-07			7.69621E-06			1 12878E-06												1 41097E-06					0.0014332
	POE concentration	Ċ.	mg/m3	1 71027E-07	1111686-07	1.8813E-07	7.69621E-06	111003648704	1.21429E-06	1 128785-06	7 130871:09	2265191-09	0105342537	0.000774668	0.000205232	0.002226	3.4596E-05	1.35756262	0.000182537	U 011575497	4.88911E-09	1.41097E-06	1.27415E-06	4.006426-06	5.26519E-09	0.0001186	0.0014332
	Water ingestion rate	IR FF	Vd.																								
	Exposure frequency	_	ďγ																								
	Exposure duration	ED BW	y																								
	Body weight	AT _o	kg																								
	Averaging time carcinogens		a .																								
	Averaging time non-carcinogens	Aīn _o	a																								
	Average intake from ingestion carcinogens	i,	mg/kg-d	6.96157E-15	4.52502E-15	7.65772E-15	3 1327E-13	1 485196-10	4.94271E-14	4.59463E-14	3 71993E-16	2.143176-16	2.17465E-10	3.15325E-11	8.353885-12	9.060825-11	1 40821E-12	5.53403E-08	7.43006E-12	4 71175E-10	1.990095-16	5.743295-14	5.18637E-14	1.63079E-13	2.14317E-16	4.82755E-12	2 5.83402E-
	Ingestion Cancer Slope Factor	CSF _e	kg-d/mg	4.00E-01	4.00E-01	4.00E-01	4.00E-01	5.50E-02	7.306-01	7.30E+00	7.306-01	7.30E-02	1 106+00)	1 40E-02	6.20E-02	1,305-01		8.405-02		7.30E+00		7.80E-02	1 60E+00	7.30E-01		
	Rak	R	fraction	2,78E-15	1.81E-15	3.D&E-15	1.25E-13	8.17E-12	3.61E-14	3.35E-13	2.72E-16	1.56E-17	2.39E-10)) 17E-13	5.62E-12	1,83E-13	:	6.245-13		1 456-15		4.05E-15				
	Total carcinogenic risk for exposure route	R,	fraction																								
	Average intake from ingestion non-carcinogens ingestion Reference Dose	RfD.	mg/kg-d mg/kg-d	8.12183E-14	5.27919E-14	2.00E-05	3.65482E-12	4 00E-03	5.7665E-13	5.36041E-13	4.33992E-15	2.50037E-15	2.5371E-09	4.00E-02	2.006-02	2.00E-02	7.00E-04		2.00E-02	1.00E-02	!	6,70051E-13 4,00E-03	2.00E-04	8.00E-04	2.50037E-15	4.00E-03	2.0064
	Hazard Quatlent Total Hazard Index	HQ HI	mg/kg-d mg/kg-d			4.467E-09		4.331796-07						9.19697E-09	4.8/315-07	3.20346E-U0	2.34/025-06	3.22819E-05	4.33425-09	5.49704E-07		1.6/5136-10	3.02538E-09	23/8245-09		1 408041-08	3.403186-0
Dermat contact with creek water	POE concentration	C,	υ <u>α</u> /Ι	1 710275-07	1 11168E-07	1 88135,07	7.49421E.04	0.003448304	1 21429E-04	1128785.04	9 138875.no	5.265196-09	0.005343537	0.000774448	0.000205232	0.002226	3.45965-05	13954343	0.000182637	0.011575407	4 890115.00	1.41097E-06	1274165.04	4.006425.04	£ 24£10€.00	0.000118	0.0014332
Dermar Conjuct with Creek water	event duration	tevent	hr		11110000		1.2702.12.00		12.12.00					0.000774000				1.007.00101	0.000.0000	550.157.5477	400/1120/	1.410//200	1227-100-00	1.000121-00	320017007	WWW 1 104	0.001-0.02
	absorbed dose per event	Daeven		791158E-13	5.516536-13	1.481955-12	3,786175-10	1.36534E-10	3.17844E-12	5.06557E-12	4 16175E-14	2.36346E-14	3.17633E-11	1.550786-10	4.52686E-11	3.77871E-11	1.99165E-12	1.07752E-07	2.8797E-12	2.34503F-10	3.407445-14	5.240288-13	4.38038F-13	3.86409E-12	2.49849E-14		2.003335-
	Event frequency	EV	events/day				*														4				247007214		
	Exposure duration	ED	v																								
	Exposure frequency	E	d/y																								
	Skin surface area	SA	cm2																								
	Body weight	BW	kg																								
	Averaging fime	AT	ďγ																								
	Averaging time non-carcinogens	Aīn _e	ď																								
	Absorbed dose for carcinogens	DAD	ma/ka-d	4.25089E-12	2.96403E-12	7.96249E-12	2.034315-09	7.33597E-10	1.707786-11	2.72173E-11	2.236115-13	1.26989E-13	1.70664E-10	8.33234E-10	3.506885-10	2.0303E-10	1.07011E-11	5.78949E-07	1,547265-11	1,259986-09	1.83082E-13	2.8156E-12	3.42817E-12	2.07725E-11	1.34255E-13		1.07639E-I
	Dermai Cancer Slope Factor	CSF.	ka-d/ma	4.00E-01	4.00E-01	4.00E-01	4.00E-01	5.506-02	2.35E-01	2.35E+00	2.30E-02		1 10E+00		1.40E-02				8.406-02	,,	7.30E+00		7.80E-02			•	
	Risk	P	fraction	1 70E-12	1.19E-12				4.01E-12	6.40E-11	5.14E-15				4.91E-12				1.30E-12		1.34E-12		2.67E-13				
	Total carcinogenic risk for exposure route	Ř,	fraction	.,,						• • • • • • • • • • • • • • • • • • • •				•													
	Alternative district from the company	DAD	maller d	4.9 <i>5</i> 937E-11	3.45803E-11	9.28958E-11	2.373365-08	8.55864E-09	1 0004E.10	3 176365.10	2 408705-12	1.481545-12	1 001/00 00	0.791045.00	4.091365-09	2.368685-09	1,24846E-10	6.7544E-06	1,805146-10	1.44000E-00	2.13575E-12	2 20/0/5 11	3.99954E-11	2.42345E-10	1.5663E-12		1000
	Absorbed dose for non-carcinogens	RfD _{ow}	mg/kg-d	=37373/E-11	3.430U3E-11	2.00E-05	7330CUD	4.00E-03	(7724C+IU	3.1/3330-10	40U0/7E-12	40104E-12	1.377 1000:07	9.721066-07 4.006-02								3.28486E-11 4.00E-03			1.56636-12		1.25579E-
	Dermai Reference Dose	HQ:	mg/kg-d			4.64479E-06											1.78352E-07						2.006-04	8.00E-04		4.00E-03	
	Hazard Quotient	HQ:	mg/kg-d			4.044/7E-U0		2.13966E-06						twanteen/	13070070-00		1.703045-47	VAIO (VIOT42	7.023/207	1-3477E-U6	•	0.21216009	1 99977E-07	3027325-07			6.27894E-0
	Total Hazard Index		mg/kg-d																			·				-	
arcinogenic risk - all routes (detect arcinogenic risk - all routes (undet																											
OTAL CARCINOGENIC RISK - ALL RO		Sum Rt	fraction	3.89E-06	2.21E-06	6.64E-06	1 49E-03	4 44E-05	9.01E-06	1 31E-04	1 19E-05	3.97E-06	1 476-04	0 00E+00	1 47E-05	5.89E-07	1 93E-07	0 00E+00	6 51E-08	1.87E-05	5.63E-04	0 00E+00	1 70E-06	4 41E-05	1 44F-0K	0 00E+00	0 00E+0
on-Carcinogenic risk - all routes (d																											, , , , , , , , , , , , , , , , , , ,
on-Carcinogenic risk - all routes (u	ndetected organics)														A 188127-				Carrier-				****				
OTAL NON-CARCINOGENIC HAZAR	D INDEX - ALL ROUTES	Sum HI	traction	0	0	8.537250358	0	2.260469962	0		. 0	. 0	- 0	0 001729539	2.173180576	0.005545353	0.009537899	34.82439968	0.00045236	0.076913003	. 0	0.023172374	0 510945735	0.207252755	0	0.004534032	1.30681495

TABLE 7-18
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL B)
MESOURI ELECTRIC WORKS

						Ch	emicals of Pol	ential Concer			
Exposure Route	Parameter	Symbol	Units	Vitrobertzene	Nitrosodi-n-propykamine	Pentachlorophenol	Tefrachloroethene	inchloroethene	Vinyl Chloride	Total	S Confibriton
	Assessed balance from laboration and a service service			0 000119327	0		0.001391868	0.003737425	7.5(1)(05.05		
	Average intake from inhalation non-carcinogens	ls RfD _{esk}	mg/kg-d	5.71E-04	U	U	1 406-01	1 14E-02	2.84E-02	- 1	
	Inhalation Reference Date Hazard Quotient	HQ	mg/kg-d mg/kg-d	0.208978893				0.327844268		- 1	
	Total Hazard Index	HI.	mg/kg-d	U.20 07 /0073			UU0774 17 18	U.32/044200	UUUZ643744	4.085+01	599
											<u> </u>
cidental ingestion of creek water		C.,	ug/l		0.007212425					l l	
	POE concentration	Ç.,	mg/m3	0.000154858	0.007212425	/ 7304ZE-06	(LUUUB41116	UUZY336582	0.000325004	- 1	
	Water ingestion rate	IR EF	Vd.							ı	
	Exposure frequency	ED H	ďγ							ì	
	Exposure duration Body weight	BW	y ka							- 1	
	Averaging time carcinogens	AT _o	d d							i	
	Averaging time non-carcinogens	ATn _o	d								
		_									
	Average intake from ingestion carcinogens	l _o	mg/kg-d	6.30342E-12	2.93578E-10				1.32291E-11		
	Ingestion Cancer Slope Factor	CSF.	kg-d/mg		7 00E+00	1.20E-01	5.406-01	2.00E-02	7.20E-01	- 1	
	Rtsk	R	traction		2.06E-09	3.785-14	1.85E-11	2.396-11	9,525-12		
	Total carcinogenic risk for exposure route	R,	traction						Ĺ	2.758-09	0
	Average intake from ingestion non-carcinogens	l _a	mg/kg-d	7.354E-11	3.42508E-09	3.67107E-12	3.99434E-10	1,39315E-08	1 5434E-10	- 1	
	Ingestion Reference Dose	RFD.	mg/kg-d	5,00E-04		3,006-02	1.00E-02	3.00E-04	3,00E-03		
	Hazard Quotient	HQ	mg/kg-d	1.47086-07		1.22369E-10	3.994345-08	4.64384E-05	5.14467E-08	- 1	
	Total Hazard Index	HI	mg/kg-d						E	192.00	07
Dermal contact with creek water	POE concentration	C.	υ α/ Ι	0.000154858	0.007212425	7.730426-06	0.000841116	0.029336582	0.000325004	- 1	
	event duration	tevent	hr								
	absorbed dase per event	Daevent	ma/cm2-ever	2.52675E-12	5.279126-11	1.93543E-11	1.04633E-10	1.06659E-09	4.46083E-12		
	Event frequency	EV	events/day							i i	
	Exposure duration	ED	у .							l l	
	Exposure frequency	EF	d/y							- 1	
	Skin surface area	SA	cm2							- 1	
	Body weight	₿₩.	kg							i	
	Averaging firme	AT	ďγ							- 1	
	Averaging time non-carcinogens	ATn _e	d								
	Absorbed dose for carcinogers	DAD	ma/ko-d	1.357625-11	2.83647E-10	1.03991E-10	5 621955-10	5.730796-09	2.39685-11		
	Dermal Cancer Slope Factor	CSF ₄₄	ko-d/ma		1,805+00	1.20E-01	5 40E-01	3.00E-03	7.206-01	l	
	Risk	R	fraction		5.11E-10	1.25E-11		1725-11	1,735-11	ı	
	Total carcinogenic risk for exposure route	R,	fraction							8.186.09	05
	About adding for an ample	DAD		1 000000 40	A 200015	1 615005	6.55894E-09	/ /OFBAC =0	D TO 10		
	Absorbed dose for non-carcinogens	DAD _{no}	mg/kg-d		3.309215-09					1	
	Dermai Reference Dose	RfD.	mg/kg-d	5.006-04		3.00E-02		4.50E-05	3.00E-03	1	
	Hazard Quotient Total Hazard Index	HQ HI	mg/kg-d mg/kg-d	3.16778E-07		4.04408E-08	6.55894E-07	0.001485759	9.320 87E -08	284503	05
			was not to								
arcinogenic risk - att routes (detecte										2.23E-03 8.25E-04	
protnogenic risk - all routes (undete		C == 5 ¹	fraction	0 00E+00	201E-04	2,425-05	271E-04	7.74E-06	1 17E-06	3.07E-03	
OTAL CARCINOGENIC RISK - ALL RO On-Carcinogenic risk - all routes (de		Sum Rt	ildelion	V UUC+UU	201604	2,420-05	2/15-04	//46-06	11/5-06	5.87E+01	
	rieciou discrita)									3.07 [101]	
on-Carcinogenic risk - all routes (un										1 01E+01	

TCE slope factor

TABLE 7-19
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

_														***		Chemicals	of Potential C	oncern					<u>-</u>	-	
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbol	Uraits	Non Contaminant- Specific Parameters	 1,22-Tefractionefhane	1,1,2-Trichloroethane	1,1-Dichloroethane	Total 1 2 Dichloroefhane	1 2 4 Trichlorobenzene	1,2-Dichloroethane	1,2-Dichlaropropane	1,3-Dichlorobenzene	1,4-Dichtorobenzene	2 4,6-Tichlorophenol	2,4-Dirthotolvene	2,6-Dinitrototoene	2-Chlorophenol	3,3-Dichtorobenzidine	4,6-Diritto-2-Weltryl Pheno	Arockor-1016	Aroctor-1221	
				POTbriller				7.59E-06	9.30E-05	2075.02	7 425-03	40000	1005.04	10/504	9,000,00	4.1/5.00	0.00E+00	0.00E+00	0000:00	20/50/	0.000.00	0.005:00	4745.00	0.005.00	
Groundwater	Air	Indoor at	Vapour initusion - inhalation	POE concentration POE concentration Inholation rate Exposure firme Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Co-in Co-in IR ET ED BW ATCO	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25,550 2,190	7.596-09	9.30E-08	2275-03 2275-06	7.425-06		1.92E-04 1.92E-07	1.06E-04 1.06E-07	8.90E-06 8.90E-06	6.16E-06	0.005+00	0.005+00	0.00E+00 0.00E+00	3.06E-04 3.06E-07	0.00E+00 0.00E+00	0.00E+00 0.00E+00	6.76E-08 6.76E-11	0.00E+00 0.00E+00	
				Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l _e CSF _{lein} R R ₁	mg/kg-d kg-d/mg fraction fraction		4.19218E-10 2.03E-01 8.51E-11	5.13666E-09 5.70E-02 2.93E-10	1.253795-07	4 09828E-07	2.259026-07	1 060475-08 9 105-02 9 655-10	5.85468E-07	4.91573E-07	3.402355-07 2.20E-02 7.49E-09	0 1.09E-02 0.00E+00	o	0	1.690136-08	0	0	3.73374E-12 4.00E-01 1.49E-12	0 4.00E-01 0.00E+00	
				Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	i. RfD _{in} , HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4.890875-09	5.992775-08	1.46275E-06	4 78133E-06	2.63553E-06 1 14E-03 0.002311867	1.40E-03	6 83047E-08 1 14E-03 5.99164E-05	5.735016-06	3 9694E-06 2.30E-01 1.72583E-05	0	0	0	1 97181E-07	0	0	4 35603E-11	0	
	Groundwater	Tap Water	ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C C IR EF ED BW AT ATn	ug/l mg/m3 l/d d/y y kg d	1 350 6 15 25,550 2,190	0.09259 0.09259	0.106095 0.106095	12.214 12.214	7.58 7.58		0.18647 0.18647	0.099665 0.099665	32.98 32.98	39.23 39.23	0 19306 0 19306	0.761955 0.761955	0.266 0.266	3.546 3.546	0.29747 0.29747	0.19109 0.19109	0 1608 0.1608	0.093235 0.093235	
				Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenia risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction		5.073426-07 2.006-01 1.016-07	5.81342E-07 5.70E-02 3.31E-08	6.69265-05	4.153425-05	0.000222082	1,02175E-06 9 10E-02 9,30E-08	5.4611E-07 6.80E-02 3.71E-08	0.000180712	0.0002149 <i>5</i> 9 2.406-02 5.166-06	1 05786E-06 1 10E-02 1.16E-08	4 1751E-06 6.80E-01 2.84E-06	6.70E+00	1 94301E-05	1.62997E-06 4.50E-01 7.33E-07	1.047075-06	8.81094E-07 4.00E-01 3.52E-07	5.10877E-07 4.00E-01 2.04E-07	4.00E
				Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	ر RfD _o HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		5.919E-06 6.00E-02 9.86499E-05	4.00E-03	0.000780804 1.00E-01 0.007808037	3.00E-02	1.00E-02	2.006-02	6.37128E-06 1 10E-03 0.005792071	3.006-02		1,00E-04	2.00E-03	1.70046E-05 1 00E-03 0.017004566			1.22158E-05 1 00E-04 0 122157991	7.00E-05	5.96023E-06	7 193386-
			Dermal confact with tap water	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Ston surface area Body weight Averaging time non-carcinogens	C., tevent Dosven EV ED EF SA BW AT ATn.,	ug/l hr fr mg/cm2-ever events/day y d/y cm2 kg d/y d	1 1 6 350 6,600 15 25,550 2,190	0.09259 1.71293E-09		12.214 1.44936E-07	7.58 1.01602£-07		0.18647 1.3784E-09	0.099665 1 44735E-09	32.98 4 44855E-06	39.23 3.83727E-06	0 19306 2.15732E-08	0.761955 6.90925E-09	0.266 0	3.546 5.85864E-08	0.29747 1.76154E-08	0 19109 1 920596-09	0.1608 0	0 073235 3.9849E-08	
				Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{oler} R R ₁	mg/kg-d kg-d/mg fraction fraction		6.19469E-08 2.00E-01 1.24E-08	5.706-02	5.24152E-06	3.67439E-06	0.000282986	4.9849E-08 9.10E-02 4.54E-09	5 23424E-08 6.80E-02 3.56E-09	0.000160679	0.000138773 2.40E-02 3.33E-06	7.80182E-07 1 10E-02 8.58E-09			2.118745-06	6.37049E-07 4 50E-01 2.87E-07	6.9457E-08	0 4.00E-01 0.00E+00	1.44112E-06 4.00E-01 5.76E-07	4.006
				Absorbed dose for non-carchagens Dermal Reference Dase Hazard Quaffent Total Hazard Index	DAD _{no} RfD _{ose} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02		1.006-01	1.00E-02	0.003301501 1.00E-02 0.330150105	2,006-02	1 105-03	3.00E-02	3.005-02		2.00E-03	1 00E-03	2.47186E-05 5.00E-03 0.004943729	7 43224E-06	8.10332E-07 1.00E-04 0.008103318	7.00E-05 0	1.68135-05	2.02916E
only calculated (Air for COPC with Henry	indoor Air /s Law > 1e-5 atm.m3	Vapors from tap water (mot, those with a "Y")	Concentration in top water Concentration in top water Volatilization factor POE concentration Inhabition rate Exposure time Exposure frequency Exposure duration Body weight Averaging time corcinogens Averaging time non-carcinogens	C. C. VF C. R ET EF ED 8W ATn.	ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d d	0.0005 y 0.42 24 350 6 15 25,550 2,190			12.214 y	7.58 7.58 7.58 7	40.53 y	0.18647 0.18647 0.000093235	0.099665 0.099665 Y 4.98325E-05	32.98 32.98 y 0.01649	у		0 761955 0.761955 0		3.546 Y	0.29747 0.29747 0	0 19109 0 19109 0	0.1608 0.1608 0.0000804	0.093235 0.093235 0	0.1125
				Average Intake from Inhalation carcinogens Inhalation Cancer Slope Factor Risk Tatal carcinogenic risk for exposure route	L CSF _{mh} R R,	mg/kg-d kg-d/mg fraction fraction		2.55701E-06 2.03E-01 5.19E-07	5 705-02		0.000209333	0.001119294	5.14964E-06 9 10E-02 4.69E-07	2.75239E-06	0.00091079	0 001083393 2.20E-02 2.38E-05	0 1.095-02 0 005+00	0	0	9.79279E-05	0	0	4.44072E-06 4.00E-01 1.78E-06	0 4.006-01 0.006+00	4 005-0

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TABLE 7-19

RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE \$LOPE FACTOR, WELL B)

MASSIER FECTOR WORKS

																emicals of Pol	ential Conce	<u> </u>								MISSOURI ELE	CIRIC WOR
Exposure Route	Parameter	Symbol	Units	Arocior-1242	Aroctor-1248	Arocigr-1254	Aroctor-1260 (Filtered)	Ветгеле	Berzo (a) anthracene	 Berzo(a)pyrene	Berzo(b)fluoranthene	Berzo (k) fluorcanthene	Ds(2-Chtaroethyl) Ether	bs(2-Charosopropy) Ether	Bs (2-efftyfhexyl phifhaiate)	Bromodichioromethane	Corbon Tetrachloride	Chlorobenzene	Chlorodbromomethane	Chloroform	Diberzo(a,h)Antfracene	Oberzofuan	Hexachioro-1,3-Butadiene	Hexochlorobenzene	indeno[1,2,3-cd]Pyrene	2-methytnapthalene	
Vapour intrusion - Inhalation	POE concentration	Car	ug/m3	3.486-08	0.00E+00	5.006-08	2.086-06	2.17E-03	0.00E+00 0.00E+00	0.00€+00	5.21E-08	0.00E+00	4 11E04	0.00E+00	0.00E+00	1,205-03	3.04E-05		9.875-05				7 486-07	1.206-06	0.00E+00	2.196-05	
	POE concentration Inhalation rate Exposure firme Exposure frequency Exposure duration Body weight Averaging firme concinogens Averaging firme non-carcinogens	Com IR ET ED BW ATO ATO	mg/m3 m3/hr h/d d/y y kg d	3.485-11	0 00 E+00	5.006-11	2.08E-09	2175-06	ause-au	Q.00E+00	5.216-11	6.00E+00	4.116-07	0.00€+00	0.00€+00	1,20€-06	3.046-08	1.525-03	9.87E-08	1.136-05	0.00€+00	3.25€-07	7,48E-10	1.206-09	0.00E+00	2.196-08	2.7:
	Average Intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	i _o CSF _{inh} R R _i	mg/kg-d kg-d/mg fraction fraction	1 9221E-12 4 00E-01 7.69E-13	0 4 00E-01 0.00E+00	2.76164E-12 4.00E-01 1 10E-12	1 14884E-10 4.00E-01 4.60E-11	1 19855E-07 2.73E-02 3.27E-09	0 3.08E-01 0.00E+00	0 3 08E+00 0.00E+00	2.87763E-12 3.08E-01 8.86E-13	0 3.08E-01 0.00E+00	2.27007E-08 1 16E+00 2.63E-08	0	0	6.62795E-08	1 67908E-09 5.20E-02 8.73E-11	8.3954E-05	5.45148E-09	6.24132E-07 8.10E-02 5.06E-08	0 3.08E-01 0.00E+00		4 131425-11 7 706-02 3.186-12	6.62795E-11 1 61E+00 1.07E-10	0 3.08E-01 0.00E+00	1.2076E-09	1.518
	Average intake from inhakation non-carcinogens inhakation Reference Dose Hazard Quotient Total Hazard Index	HQ HQ L	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.24245E-11	0	3.221926-11		1.39831E-06 8.57E-03 0.000163164	0	0	3.357248-11	0	2.64842E-07	0	0	7.7326E-07	1.95893E-08	0.000979463 1 70E-02 0.057615471	6.36007E-08	7.28153E-06	0	2.09425E-07	4.81999E-10	7 7326E-10	0	1.41125-08	1 7720: 8.53 0.00020
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C# CF ED BW AT AT AT AT AT A	ug/l mg/m3 Vd d/y y kg d	0 0643 0.0643	0.041795 0.041795	0.07073 0.07073	2.8735 2.8735	40.34 40.34	0.45653 0.45653	0.42438 0.42438	0.78489 0.78489	0.4522 0.4522	3.858 3.858	0.55941 0.55941	77.16 77.16	1.6075 1.6075	0.08274 0.08274	1351.08 1351.08	Q.131815 Q.131815	8.359 8.359	0.4199 0.4199		0 479035 0 479035	0.47582 0.47582	0.4522 0.4522	0.2837 0.2837	
	Average intake from ingestion continuogens ingestion Concer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R	mg/kg-d kg-d/mg traction traction	3.52329E-07 4.00E-01 1.41E-07	2.29014E-07 4.00E-01 9.16E-08	3.87562E-07 4 00E-01 1 55E-07	1.58548E-05 4.00E-01 6.34E-06	0 000221041 5.50E-02 1.22E-05	2.50153E-06 7.30E-01 1.83E-06	2.32537E-06 7.30E+00 1.70E-05	4.30077E-06 7.30E-01 3.14E-06	2.47781E-06 7.30E-02 1.81E-07	2.113976-05 1.10E+00 2.33E-05	3.06526E-06	0.000422795 1 40E-02 5.92E-06		4 5337E-07 1,30E-01 5,89E-08	0.007403178	7.22274E-07 8.40E-02 6.07E-08	4.58027E-05	2.30062E-06 7.30E+00 1.68E-05		2.62485E-06 7.80E-02 2.05E-07	2.60723E-06 1 60E+00 4 17E-06	2.47781E-06 7.30E-01 1.81E-06	1.554525-06	1,8782
	Average intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quofient Total Hazard Index	I, RFD, HQI HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	4.1105E-06	2.67183E-06	4.52155E-06 2.00E-05 0.226077626	0.000184973	0.002578813 4.00E-03 0.644703196	291846E-05	2.71293E-05	5.01756E-05	2.89078E-05	0 00024663	3.57614E-05 4.00E-02 0.000894034	2.00E-02	2,006-02	7.006-04		2.00E-02		2.684295-05	3.39116E-05 4.00E-03 0.008477911	3.06232E-05 2.00E-04 0.15311621	8.00E-04		1.81361E-05 4.00E-03 0.004534018	2.00
Dermal contact with tap water	POE concentration event duration absorbed dose per event Event frequency Exposure frequency Sich surface area Body weight Averaging time Averaging firme non-carcinogens	C _w tevent Doeves EV ED EF SA BW AT AIn _e		0.0643 r 2.10327E-07	0.041795 1.46655E-07	0.07073 3.93971E-07	2.8935 0.000100654	40.34 9.38632E-07	0.45653 8.44979E-07	0.42438 1.34667E-06	0.78489 2.527426-06	0.4522 1.43532E-06	3.858 1.55725E-08	0.55941 7 9 1863E-08	77 16 1 73515E-05	1.6075 1 92954E-08	0.08274 3.28754E-09	1351.08 7.113546-05	0.131815 1.47044E-09	8.359 1.112475-07	0.4199 2.06933E-06		0,479035 1.6962E-07	0.47582 3.2467E-07	0.4522 1.51745E-06	0.2837	3.2968
	Absorbed close for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{oler} R R _t	mg/kg-d kg-d/mg fraction traction	7.60634E-06 4.00E-01 3.04E-06	5.3037E-06 4.00E-01 2.12E-06	1.42477E-05 4 00E-01 5.70E-06	0.003640096 4.00E-01 1.46E-03	3.3945E-05 5.50E-02 1.87E-06	3.05581E-05 2.35E-01 7.18E-06	2.35E+00		5.19076E-05 7.30E-02 3.79E-06	5.6317E-07 1 10E+00 6.19E-07	2.86372E-06	0.000627505 1.406-02 8.796-06	6.20E-02	1.30E-01	0.002572569	5.31776E-08 8.40E-02 4.47E-09	4 02318E-06	7,4836E-05 7,30E+00 5 46E-04		6.13422E-06 7.80E-02 4.78E-07	1.17415E-05 1 60E+00 1.88E-05	5.48776E-05 2.30E-01 1.26E-05	0	1.19
	Absorbed dose for non-carcinogers Dermal Reference Dose Hazard Qualient Total Hazard Index	DAD _{rec} RFD _{obs} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	8.87407E-05	6.18764E-05	0.000166223 2.00E-05 8.311168083	0.042467786	0.000396025 4.00E-03 0.099006346	0.000356512	0.000568182	0.001066363	0.000605589	6.57032E-06	3.34101E-05 4.00E-02 0.000835253	3.80E-03	2.006-02	7.00E-04		2.00E-02	2.00E-03	0.000873087	4.006-03	7 15659E-05 2.00E-04 0.357829322	8 00E-04	0.000640239	4.00E-03	0.00013 2.00 0.00695
Vapors from tap water It those with a "Y")	Concentration in top water Concentration in top water Volatilization factor POE concentration inholation rate Exposure time Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C. VF C. VF C. IR ET ED BW ATa ATn ₀	ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d d	0.0643 0.0643 3 y 0.00003215	0.041795 0.041795 0		2.8935 2.8935 0 00144675	40.34 40.34 9 0 02017	0.45653 0.45653 0	0.42438 0.42438 0	0 78499 0.78497 y 0 000392445	0.4522 0.4522 0	3.858 3.858 0.001929	0 55941 0 55941 0	77 16 77.16 0		y	1351.08 1351.08 y 0.67554	0.131815 0.131815 / 6.59075E-05	y	0.4199 0.4199 0		0.479035 0.479035 y 0.0002297518	0.47582 0.47582 7 0.00023791	0.4522 0.4522 0	0.2837 0.2837 0.00014185	y 3
	Average intake from inhalation carcinogens Inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _{ini} R R _t	mg/kg-d kg-d/mg fraction fraction	1 77574E-06 4 00E-01 7.10E-07	0 4 005-01 0.006+00	1.95331E-06 4 00E-01 7.81E-07	7 99082E-05 4.00E-01 3.20E-05	0 001114047 2.73E-02 3.04E-05	0 3.086-01 0.006+00	0 3 08E+00 0.00E+00		0 3.085-01 0.00E+00	0.000106544 1 16E+00 1.24E-04	0	0	4.43934E-05	2.28498E-06 5.20E-02 1 19E-07	0.037312018	3.640265-06	0.000230846 8.10E-02 1.87E-05	3 08E-01		1.32292E-05 7 70E-02 1.02E-06		3 08E-01 0.00E+00	7.834786-06	9 4663

TABLE 7-19 RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL B) MISSOURI ELECTRIC WORKS

						Ch	emicals of Pol	ential Concer	n		
					•					1	
Exposure Route	Parameter	Symbol	Units	Ninoberzere	Nitrosod-n-propytambe	Pentachlorophenol	Tetrochiocethene	Trichlorcethene	Vhyl Chloride	Total	
Vapour intrusion - inhalation	POE concentration	Con	∪g/m3	6.87E-06	0.00E+00	0.00E+00	1.315-03	2.50E-02	9.365-04		
	POE concentration	Cor	mg/m3	6.87E-09	0.00E+00	0.002+00	1.315-06	2.50E-05	9.36E-07	i	
	Inhalation rate	IR	m3/hr								
	Exposure frequency	61 67	h/d d/y								
	Exposure duration	ED	y '							4	
	Body weight	BW	ko								
	Averaging time carcinogens	at _o atn _o	d								
	Averaging time non-carcinogens	VII.P	d								
	Average intake from inhalation carcinogens	l _o	mg/kg-d	3.7945E-10	0	0	7.23551E-08	1.38082E-06	5 1698E-08		
	Inhalation Cancer Slope Factor	CSF _{bb}	kg-d/mg				2.10E+00	6.00E-03	3.00E-02		
	Risk	R	fraction				1.52E-07	8.28E-09	1.555-09		
	Total carcinogenic risk for exposure route	R,	fraction						Ł	2.515-07	
	Average intake from inhalation non-carcinogens	<u>ا</u>	mg/kg-d	4 426925-09	0	0	8.441426-07		6.03143E-07		
	inhalation Reference Dose Hazard Quofient	RFD _{trik} HQ	mg/kg-d mg/kg-d	5.71E-04 7 75292E-06			1 406-01	1 14E-02	2.866-02	1	
	Total Hazard Index	HI	mg/kg-d	/ /3272E-06			0.027372-00	0.001413122		V88.7	
										and all and the second	
ingestion of top water	POE concentration	C*	ug/l	0.37036	5.2063	2.90636	4.32	11.6	0.234695		
	POE concentration Water ingestion rate	C⊷ IR	mg/m3 Vd	0 37036	5.2083	2.90636	4.32	11 6	0.234695		
	Exposure frequency	EF	άλγ							ŀ	
	Exposure duration	ED	y								
	Body weight Averaging time carcinogens	BW AT	kg							ł	
	Averaging time corcinogers Averaging time non-carcinogens	AT _e ATn _e	d d							1	
	Available and restricted to Self	711140	J								
	Average intake from Ingestion carcinogens	L,	mg/kg-d	2.02937E-06	2.85386E-05	1.59253E-05	2.36712E-05	6.35616E-05	0 000001286	ŀ	
	Ingestion Concer Slope Factor	C2F.	kg-d/mg		7 00E+00	1.206-01	5.40E-01	6.00E-03	7.20E-01		
	Risk Total carcinogenic risk for exposure route	R R,	traction traction		2.005-04	1.915-06	1.286-05	3.81E-07	9.26E-07	3,296-04	
			ii de ii de ii						Ĺ	32724	
	Average Intake from Ingestion non-carcinogens Ingestion Reference Dose	P	mg/kg-d	2.3676E-05	0.000332951	0.000185795	0.000276164		1.50033E-05	ŀ	
	Hazard Quotlent	RfD。 HQ	mg/kg-d mg/kg-d	5.00E-04 0.047351963		3.006-02	1.00E-02 0.027616438	3.00E-04 2.471841705	3.00E-03 0.005001111		
	Total Hazard Index	н	mg/kg-d							9_2000	
Dermal contact with top water	POE concentration	C.,	ug/l	0.37036	5.2083	2,90636	4.32	11.6	0.234695	i	
	event duration	tevent	hr .	0.0, 0.00	0.2200			1120	0.254075		
	absorbed dose per event	Daevent		3.986126-09	2.541738-08	5.14528E-06	3.8E-07	2.84437E-07	1 929455-09		
	Event traquency Exposure duration	EV ED	events/day								
	Exposure frequency	F	y d/y								
	Skin surface area	SA	cm2								
	Body weight Averaging time	BW AT	kg d/y							ł	
	Averaging time non-carcinogens	ATra	d d								
		-								ŀ	
	Absorbed dose for carcinogens	DAD _e	mg/kg-d	1 44156E-07	9 192E-07	0.000186076	1 37425E-05	1 028655-05		l	
	Dermai Cancer Slope Factor Risk	C2Far	kg-d/mg fraction		1.80E+00 1.65E-06	1,206-01 2,236-05	5.40E-01 7.42E-06	9 00E-04 9.26E-09	7.20E-01 5.02E-08		
	Total carcinogenic risk for exposure route	Ř,	fraction		1.000.00	22000	7.7200	/.20.0/	3021.00	2.225 03	
				1 /01015 0/	1.070/5.05	0.000170007	0.0001/0000			` 1	
	A basely and place designed a section of the			1.681815-06	1.0/246-05	0 002170887	1 006-02	0.000120009 4.505-05	8.14068E-07 3.00E-03		
	Absorbed close for non-carcinogens Dermal Reference Dose	DAD _{no} RfD	mg/kg-d mg/kg-d	5006-04		3.00F-02					
	Dermal Reference Dose Hazard Quotient	RfD _{der} HQ	mg/kg-d mg/kg-d	5.00E-04 0.003363629		3.00E-02 0.072362894		2.666864567	0.000271356	- 1	
	Dermal Reference Dose	RfD _{de}	mg/kg-d		·				0.000271356	1,912+01	
Vapors from tap water	Dermal Reference Dose Hazard Quotient	RfD _{all} HQ Hi	mg/kg-d mg/kg-d mg/kg-d	0.003363629	5.2063	0.072362894	0 016032862	2.666864567		1.515+01	
Vapors from tap water	Dermal Reference Dose Hazard Quotlent Total Hazard Index Concentration in top water Concentration in top water	RfD _{eer} HQ	mg/kg-d mg/kg-d		5.2063 5.2083				0.000271356 0.234695 0.234695	1.912+01	
	Dermal Reference Dase Hazard Quotient Total Hazard Index Concentration in top water Concentration in top water Volatilization factor	RfD HQ HI C., C., VF	mg/kg-d mg/kg-d mg/kg-d ug/l mg/m3 dimensionless	0.003363629 0.37036 0.37036 y	5.2083	2.90636 2.90636	0 016032862 4.32 4.32	2.666864567 11.6 11.6 y	0.234695 0.234695 y	1.912-01	
	Dermal Reference Dase Hazard Quotient Total Hazard Index Concentration in tap water Concentration in tap water Volatilization factor POE concentration	RFD HQ HI C VF C	mg/kg-d mg/kg-d mg/kg-d ug/l mg/m3 dimensionless mg/m3	0.003363629 0.37036 0.37036		2.90636 2.90636	0 016032862 4.32 4.32	2.666864567 11.6 11.6 y	0.234 <i>6</i> 95 0.234 <i>6</i> 95	1.91 2 -01	-
•	Dermal Reference Dose Hazard Quotlent Total Hazard Index Concentration in top water Concentration in top water Volutization factor POE concentration Inhalation rate	RED H	mg/kg-d mg/kg-d mg/kg-d ug/l mg/m3 dimensionless mg/m3 m3/hr	0.003363629 0.37036 0.37036 y	5.2083	2.90636 2.90636	0 016032862 4.32 4.32	2.666864567 11.6 11.6 y	0.234695 0.234695 y	1.91E-01	
•	Dermal Reference Dose Hazard Quotient Total Hazard Index Concentration in top water Concentration in top water Volutilization factor POE concentration Inhalation rate Exposure time Exposure frequency	RFD HQ HI C VF C	mg/kg-d mg/kg-d mg/kg-d ug/l mg/m3 dimensionless mg/m3	0.003363629 0.37036 0.37036 y	5.2083	2.90636 2.90636	0 016032862 4.32 4.32	2.666864567 11.6 11.6 y	0.234695 0.234695 y	1.912-01	-
. ,	Dermal Reference Dose Hazard Quotlent Total Hazard Index Concentration in tap water Concentration in tap water Volafilization factor POE concentration Inhalation rate Exposure firms Exposure frequency Exposure duration	RED. HC HE J J J J J J J J J J J J J J J J J J	mg/kg-d mg/kg-d ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y	0.003363629 0.37036 0.37036 y	5.2083	2.90636 2.90636	0 016032862 4.32 4.32	2.666864567 11.6 11.6 y	0.234695 0.234695 y	1.512-01	-
. ,	Dermal Reference Dose Hazard Quotient Total Hazard Index Concentration in top water Concentration in top water Volatilization factor POE concentration Inhalation rate Exposure time Exposure time Exposure frequency Exposure duration Body weight	RED H HQ HH C VF C IR ET ET ED BW	mg/kg-d mg/kg-d mg/kg-d ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg	0.003363629 0.37036 0.37036 y	5.2083	2.90636 2.90636	0 016032862 4.32 4.32	2.666864567 11.6 11.6 y	0.234695 0.234695 y	1.512+01	
. ,	Dermal Reference Dose Hazard Quotlent Total Hazard Index Concentration in tap water Concentration in tap water Volafilization factor POE concentration Inhalation rate Exposure firms Exposure frequency Exposure duration	RED. HC HE J J J J J J J J J J J J J J J J J J	mg/kg-d mg/kg-d ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y	0.003363629 0.37036 0.37036 y	5.2083	2.90636 2.90636	0 016032862 4.32 4.32	2.666864567 11.6 11.6 y	0.234695 0.234695 y	1.512-01	
	Dermal Reference Dose Hazard Quotient Total Hazard Index Concentration in tap water Concentration in tap water Volatilization factor POE concentration Inhalation rate Exposure time Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogers Averaging time non-carcinogens	RFD and HQ HI Color FE ED BW AT G AIR G	mg/kg-d mg/kg-d mg/kg-d ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d	0.37036 0.37036 0.37036 9 0.00018518	5.2083 0	2.90636 2.90636 2.90636 0	0 016032862 4.32 4.32 9 0.00216	2.666864567 11 6 11 6 11 6 9 0.0058	0.234695 0.234695 Y 0.000117348	1.512-01	-
•	Dermal Reference Dose Hazard Quotient Total Hazard Index Concentration in top water Concentration in top water Volatifization factor POE concentration Inhalation rate Exposure time Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Average Intake from Inhalation carcinogens	RFD _{date} HQ HI C., C., VF Co-tesp IR ET ET ED BW AT AT L U	mg/kg-d mg/kg-d mg/kg-d ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d d mg/kg-d	0.003363629 0.37036 0.37036 y	5.2083	2.90636 2.90636 2.90636 0	0 016032862 4.32 4.32 7 0.00216	2.666864567 11.6 11.6 9 0.0058	0.234695 0.234695 Y 0.000117348	1.512-01	-
Vapors from tap water oi, those with a "y"]	Dermal Reference Dose Hazard Quotient Total Hazard Index Concentration in tap water Concentration in tap water Volatilization factor POE concentration Inhalation rate Exposure time Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogers Averaging time non-carcinogens	RFD and HQ HI Color FE ED BW AT G AIT G	mg/kg-d mg/kg-d mg/kg-d ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d	0.37036 0.37036 0.37036 9 0.00018518	5.2083 0	2.90636 2.90636 2.90636 0	0 016032862 4.32 4.32 9 0.00216	2.666864567 11 6 11 6 11 6 9 0.0058	0.234695 0.234695 Y 0.000117348	1.512-01	

MEW Site File 3DISC100223

TABLE 7-19
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

															Chemicals	of Polential C	oncem				-			
ource Medium - Exposure Medium	a Exposure Point	Exposure Route	Parameter	Symbol		Non Contaminant- Specific Parameters	1,1,2,2-Tetrachloroethone	1,1,2-Trichloroethane	1,1-Dichlaroethare	Told 1,2 Dichlaroethene	1,2,4 Trichlarobertzene	1,2-Dichloroeffhane	1,2-Dichleropropene	1,3-Dichlorobergene	1,4-Dichlorobenzane	2.4.6-Trichlorophenol	2,4-Dirthotokuene	2.6-Diritrototuene	2-Chlarophenol	3,3-Dichlorobenzidine	4.6-Dhvitto-2-Methyl Phenol	Aroctor-1016	Arocka-1221	!
-	-		Average intake from inhalation non-carcinogens	le .	mg/kg-d		2.98317E-05	3.41829E-05	0.00393525	0.002442214		6.00791E-05		0.010625885		0	0	0	0.001142492	0	Đ	5.180846-05	0	_
			Inhalation Reference Dose Hazzard Quotient Total Hazzard Index	RfD _{min} HQ HI	mg/kg-d mg/kg-d mg/kg-d						1 14E-03 11.45476568	1.40E-03 0.042913644	1,14E-03 0.028167758		2.30E-01 0.054954711									
Surface Water	Creek	Incidental ingestion of creek water		C,	ug/l										0.332753253					0.000124381			2.47989E-07	
			POE concentration	Ç.	mg/m3 l/d	0.05	3.87145E-05	0.00014692	0.005107025	0.168484251	0.003415705	0.000258223	0 000138016	0.277239592	0.332753253	8.07239E-05	0.001055151	0.0001112	0 001482685	0.000124381	7 99002E-05	4.276E-07	2.47989E-07	2.99297E
			Water ingestion rate Exposure frequency	IK FF	d∕v	52 52																		
			Exposure duration	£D	ν,	6																		
			Body weight	BW	kα	15																		
			Averaging time carcinogens	AT _o	d	25.550																		
			Averaging time non-carcinogens	Aīn _o	d	2,190																		
			Average intake from ingestion carcinogens	L,	mg/kg-d		1 57586E-12		2.07879E-10	6.85807E-09	1.39035E-10	1.05108E-11	5.61785E-12	1.12849E-08	1.35446E-08	3.28583E-12	4.29494E-11	4.52634E-12	6.03519E-11	5.06286E-12	3.2523E-12	1.740526-14	1009436-14	1.21827
			ingestion Cancer Slope Factor	CSF.	kg-d/mg		2.00E-01	5.70E-02				9 105-02	6.80E-02		2.40E-02					4 50E-01		4.00E-01	4.00E-01	4.00
			Risk	R	fraction		3.15E-13	3.416-13				9.56E-13	3.825-13		3.25E-10	3.61E-14	2925-11	3.03E-11		2.78E -12		6.96E-15	4 04E-15	4.87
			Total carcinogenic risk for exposure route	K,	fraction																			
			Average intake from ingestion non-carcinogens	٦.	mg/kg-d				2.42525E-09				6.55416E-11							5.90667E-11	3.79435E-11	2.030616-13	1 17766E-13	1.42132
			Ingestion Reference Dose	RfD.	mg/kg-d		6.00E-02														1.00E-04	7.006-05		
			Hazard Quotient Total Hazard Index	HQ HI	mg/kg-d mg/kg-d		3 064 165-10	1 74425E-08	2.42525E-08	8.001085-06	1 62207E-07	6.131315-09	5 95833E-08	4.38857E-06	5.26733E-06	3.83347E-07	2.505386-07	5.28073E-08	1 40821E-07		3.79435E-07	2.90087E-09		
		Dermal contact with creek water	POE concentration	C,	ug/l		3.87145E-05	0.00014692	0.005107025	D.168484251	0.003415705	0.000258223	0.000138016	0.277239592	0.332753253	B.072396-05	0.001055151	0.0001112	0.001482685	0.000124361	7 99002E-05	4 2745-07	2.47989E-07	2 99297
			event duration	tevent	hr	2															***********		200707203	
			absorbed dose per event	Daeven			1 01289E-12	2.99941E-12	9.41817E-11	3.521 196-09	9.32615E-10	297547E-12	3 089495-12	5.39677E-08	4.70013E-08	1.27568E-11	1.3531E-11	0	3.66143E-11	104164E-11	1.13569E-12	0	1.498955-13	1,809071
			Event frequency	EV	events/day	1																		
			Exposure duration Exposure frequency	ED EF	d/γ	52 52																		
			Skin surface area	ŠĀ	cm2	6.600																		
			Body weight	BW	ka	15																		
			Averaging time	AT	d/y	25,550																		
			Averaging time non-carcinogens	ATn _e	d	2.190																		
			Absorbed dose for carcinogens	DAD _o	mg/kg-d		5.44227E-12	1 61158E-11	5.06038E-10	1,89193E-08	5.010935-09	1.598725-11	1 65998E-11	2.89968E-07	2.52537E-07	6.8542E-11	7.27022E-11	0	1 96728E-10	5.596726-11	6.10206E-12	0	8.05383E-13	9.720148
			Dermal Cancer Slope Factor	C2F_	kg-d/mg		2.00E-01					9 10E-02	6.80E-02		2.40E-02					4.506-01		4,005-01	4 005-01	4.00E
			Risk Total carcinogenic risk for exposure route	R R _t	fraction fraction		1.09E-12	9 19E-13	l			1.45E-12	1 135-12		6.06E-09	7_54E-13	5.826-11	0.00E+00		2.526-11		0 00E+00	3.22E-13	3.89
			Absorbed dose for non-carcinogens	DAD _{eo}	mg/kg-d		6.34932E-11	1.88018E-10	5.903776-09	2.20725E-07	5.846095-08	1.865176-10	1 93665E-10	3,382965-06	2.94627E-06	7 994565-10	8.481925-10		2.295165-09	6.52951E-10	7.11907E-11	0	9.396145-12	1 13402
			Dermal Reference Dose	RfD.	mg/kg-d		6-00E-02	4 006-03	1.00E-01	1.00E-02	1 00E-02	2.00E-02	1.105-03	3.00E-02	3.006-02						1.00E-04	7.00E-05		
			Hazard Quotient	HQ	mg/kg-d		1.058226-09	4.70044E-08	5.90377E-08	2.20725E-05	5.84609E-06	9.32587E-09	1 76059E-07	0.000112765	9.8209E-05	7.996565-06	4.24096E-07	. 0	4.59033E-07		7.11907E-07	0		
			Total Hazard Index	н	mg/kg-d		···																	
		Carcinogenic risk - all routes (detection carcinogenic risk - all routes (undetection)																						
		TOTAL CARCINOGENIC RISK - ALL R	OUTES	Sum Rt	fraction		6.33E-07	2.03E-07	0 00E+00	0.00E+00	0.00 E+0 0	5.67E-07	4 07E-08	0.00E+00	3.23E-05	2025-08	3.04E-06	9 77E-06	0 00E+00	1.02E-06	0.00E+00	2.135-06	7.81E-07	9 426
		Non-Caramagenic risk - all routes (c																				-		
		Non-Carcinogenic risk - all routes (s		- 6 111	E		A 600 110204	0.00102525	6 808 (1 -1-	A A PARTY CO	18.81/88	0.0/0/03/	N 10 10 10 10 10 10 10 10 10 10 10 10 10	- A 11000100	A 1883/45	A A 1 / 1 / 3 - 1 - 1	A ARIAIA		**********					
		TOTAL NON-CARCINOGENIC HAZA	KD INDEX - ATT KONIES	Sum HI	fraction		0 000110697	0.00184942	0.00841963	UU52//3483	12.04632955	0.04362/133	0 0345/5128	U 132956229	0.192637715	0.21444/013	U 025812968	0.017004619	0.050281315	0	0 1302624	0.146849318	0	

Notes.

1 ug/l = micrograms per Liter

2 ug/m3 = micrograms per oubla meter

3- lv/d = hours per day

4- Vid = Bert per day

5- dy = days per year

6- y = year

7 kg = kilogram

8- d = day

9 tr = hour

10- mg/kg-d = miligrams per idlagram per day

11 kg-d/mg = kilograms per day per miligram

12- and = requere carifmeter

13- m3/tr = cubic meter per hour

14- mg/m3 = miligrams per cubic meter

15- mg/cm2-event = miligrams per square centimeter per event

16- mg/cm3-event = miligrams per cubic centimeter per event

TABLE 7-19
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

												-			a	remicals of Po	tential Conce	m									
Exposure Route	Parameter	Symbol	Units	Aroctor-1242	Aroctor-1248	Aroclar-1254	Arockar-1260 (Filtered)	Berzene	Вепто(а) апПтаселе	Berzo(a)pyrene	Berzo(b) fluoranthene	Benzo(k)fluoranthene	bs(2-Chloroethy) Ether	bk(2-Chlorokopropyl) Ether	 Bk (2-eitrythexyl phithalate)	Bromodichkromethane	Carbon Tefrachloride	Choroberzene	Chlorodibromomethane	Chloroform	Diberzo(a,h)Anifracene	Disenzoluran	Hexachloro-1 3-Butadiene	Нехастю oberzene	indeno(1,23-cd)Pyrene	2-methyboutholene	
	Average intake from inhalation non-carcinogens	L	mg/kg-d	2.07169E-05	o	2.27886E-05	0.000932262	0.012997216	0	0	0.000252885	0	0.001243016	0	0	0.000517923	2.66581E-05	0.435304871	4.24697E-05	0.002693201	- 0	0.000170915	0.000154341	0.000153305	0	9 14058E-0	5 0.00110
	Inhalation Reference Dose	RfD	mg/kg-d					8.57E-03				•		-	•			1.70E-02							•		8.5
	Hazard Quotient	HQ	mg/kg-d					1.516594684										25.60628654									1.28869
	Total Hazard Index	HI	mg/kg-d																					,			
idental Ingestion of creek water	POF concentration	C.	υg/i	1,710275-07	1,111686-07	1.28136-07	7.69621E-06	0.003648704	1.214295-06	1 128785-06	9 138876-09	5.26519E-09	0.005342537	0.000774668	0.000205232	0.002226	3.45965-05	1.35956262	0.000182537	0.011575497	4.889115-09	1.41097E-06	1.27415F-04	4.00642E-06	5.765195-09	0.000118	8 D.00143
	POE concentration	حيّ	ma/m3	1.71027E-07	1 1116BE-07	1.88136-07	7.69621E-06	0.003648704	1.21429E-06	1 128786-06	9 13887E-09	5.26519E-09	0.005342537	0 000774668	0.000205232	0.002226	3.4596E-05		0.000182537						5.26519E-09	0.000118	6 0000143
	Water ingestion rate	IR.	Vd																							0.000	
	Exposure frequency	Œ	d/y																								
	Exposure duration	ED	y																								
	Body weight	BW	kg																								
	Averaging time carcinogers	AT _o	d																								
	Averaging time non-carcinogens	ATn _e	d																								
	Average intake from ingestion carcinogens	i,	mg/kg-d	6.96157E-15	4 52502E-15	7.65772E-15	3.1327E-13	1 48519E-10	4.94271E-14		3 71993E-16	2.14317E-16	2.17465E-10	3.15325E-11	8.35388E-12	9.06082E-11	1 408215-12	5.53403E-08	7 430068-12	4.71175E-10	1 99009E-16	5.74329E-14	5.18637E-14	1 630796-13	2.14317E-16	4.82755E-13	2 5.8340
	Ingestion Cancer Slope Factor	CSF _e	kg-d/mg	4.00E-01	4.00E-01	4.006-01	4.00E-01	5.506-02	7.30E-01	7.30E+00	7,30E-01	7.306-02	1 10E+00		1 405-02	6-20E-02	1,305-01		8 405-02		7 30E+00		7.806-02	1 60E+00	7.30E-01		
	Risk	R	fraction	2.78E-15	1.81E-15	3.066-15	1.25E-13	8.17E-12	3.615-14	3.35E-13	2.72E-16	1.56E-17	2.39E-10		1 17E-13	5.62E-12	1.83E-13		6.24E-13		1.456-15		4.05E-15				
	Total carcinogenic risk for exposure route	R,	fraction																								
	Average Intake from Ingestion non-carcinogens	l,	mg/kg-d	8.12183E-14	5.279195-14			1 73272E-09	5.7665E-13	5.36041E-13	4.339926-15	2.50037E-15	2.5371E-09		9 74619E-11			6.45637E-07				6.70051E-13			2.50037E-15		
	Ingestion Reference Dose	RfD,	mg/kg-d			2.00E-05		4.00E-03						4.00E-02								4 00E-03	2.00E-04	8 00E-04		4.00E-00	
	Hozord Quotient	HQ	mg/kg-d			4 467E-09		4.33179E-07						9.19697E-09	4.87315-09	5.28548E-08	2.34702E-08	3.22819E-05	4.3342E-09	5.49704E-07		1.67513E-10	3.02538E-09	2.37824E-09		1 40804E-00	3.40318
	Total Hazard Index	H	mg/kg-d																								
ermal contact with creek water	POE concentration	C.	ug/l	1 71027E-07	1.111685-07	1.8813E-07	7.69621E-06	0.003648704	1.214296-06	1 12878E-06	9 13887E-09	5.26519E-09	0.005342537	0 000774668	0.000205232	0.002226	3.45965-05	1.35956262	0.000182537	0.011575497	4.88911E-09	1.410976-06	1.27415E-06	4.00642E-06	5.265196-09	0.000118	6 0.00143
	event duration	tevent	hr																								
	absorbed dose per event		nt mg/cm2-ever	7.911586-13	5.516536-13	1.48195E-12	3.786176-10	1.36534E-10	3.178446-12	5.06557E-12	4.161756-14	2.36346E-14	3.1763385-11	1.55078E-10	6-52686E-11	3.778715-11	1.99165E-12	1.077526-07	2.8797E-12	2.34503E-10	3.40/445-14	5.2402BE-13	6.38038E-13	3.86609E-12	2.49869E-14	,	0 2.0033
	Event frequency	EV	events/day																								
	Exposure duration	ED EF	y dk.																								
	Exposure frequency	SA	dl/y cm2																								
	Skin surface area	BW	ka																								
	Body weight Averaging time	AT	ďΛ																								
	Averaging time non-carcinogens	ATn _a	ď																								
	Absorbed dose for carcinogens	DAD _o	mg/kg-d	4 25090F-12	9 94403E-19	7.96249E-12	2 U3431EV0	7.33597E-10	1.70778E-11	2.72173E-11	2.23611E-13	1.26989E-13	1 706645-10	8 33334E-IN	3 50688E-10	2.03035-10	1020116-11	5.789496-07	1.54726E-11	1 259986-09	1 830825-13	281645-12	3.428176.12	2.077966 11	1,34255E-13		0 1.07639
		CSF	kg-d/mg	4 00E-01				5.506-02	2.35E-01	2.35E+00	2.30E-02		1.10E+00		1 40E-02			W.0171001	8 40E-02		7,30E+00		7.80E-02	1 60E+00		•	130700
	Dermal Cancer Slope Factor	D der	fraction	1,706-12					4.01E-12	6.40E-11	5.14E-15		1.88E-10		4 91E-12				1,30E-12		1,34E-12		2.67E-13	3.32E-11			
	rest Total carcinogenic risk for exposure route	R,	fraction	1475214	1 176-12		W.172-10	7000-11	War 16.18	0.702.11	W1-10	7444-19	1200-10		471644	120002-14	14/14		INDE-12		147512		20/5-13	3.345-11	307014		
	Absorbed dose for non-combostant	DAD _m	mg/kg-d	4.9 <i>5</i> 9376-11	3.45803E-11	9,289585-11	2 373345.00	8.55864E-09	1 9924F-10	3 175355-10	2.408795-12	1 481545-12	1 001085.00	9.72106E-09	4 09136E-09	2.36868E-09	1.248466-10	6.7544E-06	1.805145-10	1 449985-00	2 126055-12	3.28486E-11	3.99954E-11	2.423455.10	1 5663E-12	,	0 1.2557
	Absorbed dose for non-carcinogens	RfD _{day}	mg/kg-d mg/kg-d	-10/0/E-11	4-300C-11	2.006-05		4 005-03	1.57271-10	W17000E-10	2000/7E-12	1 10101012	1 77 (400-47	4 00E-02								4.00E-03	2.00E-04	8.00E-04		4.00E-0	
	Dermal Reference Dose	HQ:	mg/kg-d			4.644796-06		2.13966E-06							1 07667E-06								1 99977E-07				0 6.2789
	Hazard Quofient Total Hazard Index	HI	mg/kg-d			0/712-00		2.07000-00						2.70/2000/		10-040-07	1.703322197	U-U-U-U-U-U-U-U-U-U-U-U-U-U-U-U-U-U-U-	, N. 21 C-07	1-0-1712-06		Q.41410C-07		30273200/			0.2/074
cinogenic ilsk - all routes (detec	ned organics)					_				-																	
cinogenic risk - all routes (undet AL CARCINOGENIC RISK - ALL RI	ected organics)	Sum P4	fraction	3.895-06	2.215-04	6.64E-06	1 49E-03	4 445-05	9 01E-06	1,31E-04	1 19E-05	3,975-06	1 47E-04	0.000=00	1 47E-05	5.89E-07	1 935-07	0 00E+00	6.516-08	1.875-05	5.63E-04	0.00€+00	1 705 77	4.415-05	1 AVE OF	0 00E+0	A 600
AL CARCINOGENIC KISK - ALL K n-Carcinogenic risk - all routes (d		JUITI KI	nucion	3.071.406	2.210-00	0.040-00	1 472 03	4 446-00	7011-06	121204	1 171-05	3.7/040	14/2-04	0 0000	1 47 2 03	3.070-07	1 730-07	0000	0.310-08	1.070405	3.636-04	0.00=00	1 705-06	441205	1 440-05	U WEFU	0.005
-Carcinogenic risk - all routes (u	ndetected organics)							8 8 / 8 / / / / / *							A 1 94 1 8 8 9 9 9	A AAFF 18			A 888 / 87								
AL NON-CARCINOGENIC HAZAR	D INDEX - ALL ROUTES	Sum Hi	fraction	0	C	8.537250358	0	2.260469962	0	0	0	0	0	0.001729539	2.173180576	U UUSS45353	U UU753/899	34.82439968	0 00045236	0.076913003	0	0.023172374	U 510745735	U.207252755	0	0 00453403	z 1.306814

TABLE 7-19
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL B)
MISSOURI ELECTRIC WORKS

						Ch	emicals of Pot	ential Concer	n	T	
Exposure Route	Parameter	Symbol	Umits	Vitroberzene	Nitrosod-n-propylamine	Pentachlorophenol	Tefrachloroethene	litchlorcethene	Vinyl Chloride	fotal	;
				0.000110000							
	Average intake from inhalation non-carcinogens	l ₀	ma/ka-d	0 000119327	0	U	0.001391868	-	7.56168E-05		
	Inhalation Reference Dose	RfD _{ink}	ma/kg-d	5.71E-04			1 406-01	1 14E-02	2.86E-02		
	Hozord Quoffent	HQ	ma/ka-d	0.208978893			0.009941918	0.327844268	0.002643944		_
	Total Hazard Index	HI	mg/kg-d							ADSE-01	9
	POE annualmentan	C.,		0.000154858	0.0000000000	7 700 405 84	0.000841116	0.000004500		1	
cidental ingestion of creek water	POE concentration	c.,	ug/l							į.	
		IR	mg/m3	WWW.154658	0.007212425	/JUEZ-06	WWW.116	UUU27336582	0.000325004	J	
	Water ingestion rate	EF IK	Vd							1	
	Exposure frequency Exposure duration	ED	d/y							l	
	Body weight	BW	y ko:							l	
		AT _o	d							l	
	Averaging time carcinogens Averaging time non-carcinogens	ATr.	d							l	
	Averaging lime non-colchogens	VIIE	•								
	Average Intake from Ingestion carcinogens	L.	mg/kg-d	4 303436.13	2.93578E-10	2 144425 13	3.42372E-11	1 10/136.00	1.322915-11		
		Ċsŧ,	kg-d/mg	0.000-021-12	7.00E+00	1,20E-01	5.40E-01	6,00E-03	7.206-01	- 1	
	Ingestion Cancer Slope Factor Risk	ω. R	fraction						9.52E-12	1	
		R _i	fraction		2.06E-09	3.78E-14	1.85E-11	7 16E-12	7.3425~1.2	2.736-09	
	Total carcinogenic risk for exposure route	ry	nuction						L.	2.73648	
	Average Intake from Ingestion non-carcinogens	Į,	mg/kg-d	7.354E-11	3.42508E-09	3.67107E-12	3,99434E-10	1,393156-08	1.5434E-10	L L	
	Ingestion Reference Dose	RfD.	ma/ka-d	5.00E-04		3.006-02	1.00E-02	3.00E-04	3.00E-03	1	
	Hazard Quotient	HQ	mg/kg-d	1.47085-07		1.22369E-10			5.14467E-08		
	Total Hazard Index	н	mg/kg-d						ľ	7.72E-05	
		_									
ermal contact with creek water	POE concentration	C.,	u a /1	0.000154858	0.007212425	7 730425-06	0.000841116	0.029336582	0.000325004		
	event duration	tevent	hr .								
	absorbed dose per event	Daevent	mg/cm2-ever	2.526756-12	5.279125-11	1 93543E-11	1.046338-10	1.0665915-09	4.46083E-12		
	Event frequency	EV	events/day								
	Exposure duration	ED	у								
	Exposure frequency	EF	ďγ								
	Skin surface area	SA	cm2								
	Body weight	BW	kg							l l	
	Averaging time	AT-	ďΛ							I	
	Averaging time non-carcinogens	Aîn _e	ď							1	
	Absorbed dose for carcinogens	DAD	mg/kg-d	1.357696-11	2.83647E-10	1 039915-10	5 62195E-10	5.73079E-09	2.39685-11		
	Dermal Cancer Slope Factor	CSF.	ka-d/ma	1901000011	1,805+00	1.206-01	5.40E-01	9.00E-04	7.206-01	1	
	Risk	R	rg-a/mg fraction		5.11E-10	1.25E-11	3.04E-10	5.16E-12			
	Total carcinogenic risk for exposure route	R,	fraction		211510	1220011	30-6-10	3.100-12	1/30-11	8.175-09	
		•									
	Absorbed dose for non-carcinogens	DAD _{nc}	mg/kg-d	1.58389E-10	3.309216-09	1.213225-09	6.55894E-09	6.68592E-08	2.79627E-10	- 4	
	Dermal Reference Dose	RTD _{der}	mg/kg-d	5.00E-04		3.00E-02	1.006-02	4.50E-05	3.00E-03	- 1	
	Hazard Quotient	HQ	mg/kg-d	3.16778E-07		4.04408E-08	6.55894E-07	0.001485759	9.32089E-08	- 1	
	Total Hazard Index	_н_	mg/kg-d							284500	
rcinogenic risk - all routes (detecte										2.23E-03 8.25E-04	
rcinogenic risk - all routes (undete		Cross Dr	-	0.005.00	ONIEN	N INC. NO	0.715.04	0.995.67	1 19E A7		
TAL CARCINOGENIC RISK - ALL RO		Sum Rf	fraction	0 00E+00	2.01E-04	2.425-05	2.71E-04	2.32E-06	1 17E-06	3.06E-03 5.87E+01	_
n-Carcinogenic risk - all routes (de n-Carcinogenic risk - all routes (un										1.01E+01	

TABLE 7-20 RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL C) MISSOURI ELECTRIC WORKS

		_	•													Chemicat	of Potential C	oncem					MISSOURI ELEC	
Source Medium	Exposure Medilum	Exposure Point	Exposure Route	Parameter	Symbol		Non Conforminant- Specific Parameters	1 1,2 2-Tetrachloroethane	1 1 2-Trichlaroethane	1.1-Dichloroefhane	Total 1.2 Dichloroethene	1,2.4 Trichtoroberzene	1,2-Dichlaroethane	1,2-Dichloropropane	1,3-Dichlorobergene	I,4-Dichlorobenzene	2.4.6-Trentorophenol	2.4-Diritrototuene	2.6-Dinitrotokene	2-Chlorophenol	3.3-Dichloroberuidhe	4,6-Dinitro-2-Mettryl Phenal	Arockor-1016	8
Commitmeter	Alt	Indoor air	Vapour intrusion - inhalation	POE concentration	C.,	ug/m3		7.59E-06	9.306-05	2.27E-03	7.426-03	4.09E-03	1 92E-04	1 06E-04	8.905-03	6.16E-03	0.00E+00	0.00E+00	D.00E+00	3.06E-04	0 00E+00	0.00=+00	/ 7/5 00	0.00€+00
Groundwater	~		vipco sinoson virtualis.	POE concentration Inhabition rate Exposure time Exposure frequency Exposure duration Body weight Averaging fine carcinogens Averaging fine non-carcinogens	Com IR ET EF ED BW AT _e ATn _e	og/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25.550 2.190	7.595-09	9.30E-08	2.275-06	7 425-06		1 925-07	1.06E-07	8 905-06	6.16E-06				3.06E-07	0.005+00	0 00E+00		
				Average intake from inhalation carcinogens inhalation Cancer Slape Factor Risk Total carcinogenic risk for exposure route	la CSF _{INI} R R,	mg/kg-d kg-d/mg traction fraction		4.19218E-10 2.03E-01 8.51E-11	5.13666E-09 5.70E-02 2.93E-10	1.25379E-07	4 098285-07	2.259025-07	1.06047E-08 9 10E-02 9 65E-10	5.854685-09	4 91573E-07	3 40235E-07 2.20E-02 7.49E-09	0 1 09E-02 0.00E+00	0	Đ	1.690136-08	0	0	3.73374E-12 4.00E-01 1 49E-12	4.005-0
				Average intake from inhalation non-carcinogers Inhalation Reference Dose Hazard Quofient Total Hazard Index	L RfD _m HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4 89087E-09	5 99277E-08	1 46275E-06	4 78133E-06	2.63553E-06 1.14E-03 0.002311867	1 23722E-07 1.40E-03 8.83726E-05	3 14E-03	5.735016-06	3 9694E-06 2.30E-01 1 72583E-05	0	0	0	1 971816-07	a	0	4.35603E-11	G
	Groundwater	Tap Woter	ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C. IR EF ED BW AT _c ATn _b	ug/I mg/m3 I/d d/y y kg d d	1 350 6 15 25,550 2,190	2.22545E-07 2.22545E-07		0.000029357 0.000029357	0 00000122 0 00000122		2.581E-08 2.581E-08			0.0000181 0.0000181				0 000008523 0.000008523				
				Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for expasure route	L CSF。 R R	mg/kg-d kg-d/mg fraction fraction		1.21942E-12 2.00E-01 2.44E-13	8.04658E-14 5.70E-02 4.59E-15		6.68493E-12	1 07397E-11	1 41425E-13 9 10E-02 1,29E-14	6 80E-02	8.9863E-11	9.91781E-11 2.40E-02 2.38E-12	1 106-02	5.77896-13 6.80E-01 3.93E-13	6 70E+00	4.670146-11	3.91773E-12 4.50E-01 1 76E-12	2.51668E-12	1.21918E-13 4.00E-01 4 88E-14	7.07123E-14 4.00E-01 2.83E-14
	_			Average Intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	KfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	9.38767E-13 4 00E-03 2.34692E-10	1,006-01	1.00E-02		1 64995E-12 2,00E-02 8,24977E-11	1 105-03	3 00E-02	3.006-02	1 00E-04	6.74205E-12 2.00E-03 3.37103E-09	1 00E-03	5.44849E-10 5.00E-03 1 0897E-07	4 57068E-11	2.93613E-11 1 00E-04 2.93613E-07		8 24977E-13
			Dermal contact with tap water	POE concentration event duration	C _w tevent	ug/l hr	1	2.22545E-07	1 46855-08	0.000029357	0.00000122	0.00000196	2.5815-08	1.37955-08	0 0000164	0.0000181	4 6403E-07	1.05465E-07	0.000000639	0.000008523	7.14985E-07	4 59295E-07	2.225E-08	1.2905E-00
				absorbed dase per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time Averaging time non-carcinogens	Doseven ED EF SA BW AT ATn ₆		350 6.600 15 25.550 2.190	4 117116-15	2.01787E-16	3.48361E-13	1.63529E-14	3.78416-13	1.9079E-16	2.00333E-16	2.21213E-12	1.77045E-12	5.18524E-14	9.56334E-16	0	1.408165-13	4.23395E-14	4 61624E-15	0	5 5156SE-15
				Absorbed dase for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _c CSF _{der} R R ₁	mg/kg-d kg-d/mg fraction traction		1 48893E-13 2.00E-01 2.98E-14	7.2975E-15 5.70E-02 4,16E-16		5.91393E-13	1.36856-11	6.89979E-15 9.10E-02 6.28E-16		8 00005E-11	6.402715-11 2.405-02 1.545-12	1 106-02		6.70E+00	5.092516-12	1 53118E-12 4 50E-01 6.89E-13	1 66944E-13	0 4,00E-01 0.00E+00	, , , , , , , ,
	_			Absorbed dase for non-carcinogens Dermal Reference Dase Hazard Quoffent Total Hazard Index	DAD _{ne} RfD _{der} HQ Hi	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02			1,005-02		8.04975E-14 2.00E-02 4.02488E-12	1 105-03	3.00E-02	3.006-02	1 00E-04	2.00E-03	1 00E-03	5.94126E-11 5 00E-03 1 18825E-08	1.786385-11	1.94768E-12 1 00E-04 1.94768E-08	7 00E-05	2.32715E-12
	Alr	Indoor Air	Vapors from tap water	Concentration in top water Concentration in top water	c.,	ug/l mg/m3		2.22545E-07 2.22545E-07		0.000029357 0.000029357	0 00000122 0.00000122	0 00000196 0 00000196	2.581E-08 2.581E-08	1 3795E-08 1 3795E-08		0.0000181 0.0000181			0 000000639 0 000000639	0.000008523 0.000008523				1.2905E-08 1.2905E-08
(only calculated f	for COPC with Henry's	Law > 1e-5 atm m3/i	mol, thase with a 'Y')	Volatilization factor POE concentration triholation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	VF Co-Aug IR ET ED BW ATo ATo	dimensionless mg/m3 m3/hr h/d d/y y kg d d	0.0005 y 0.42 24 350 6 15 25.550 2,190		7.3425E-12	y 1 46785E-08	y 6 1E-10	y 9,86-10	y 1.2905E-11	y 6.8975E-12	8.2E-09	9.05E-09	0	0	0	y 4 2615E-09	0		y 1.11255-11	0
				Average intake from inhalation carcinogens	i,	mg/kg-d		6.1459E-12	4.05547E-13	B 10736E-10	3.36921E-11	5 41282E-11	7 1278E-13	3 809 <i>6</i> 9E-13	4 52915-10	4.998586-10	0	0	0	2.35375E-10	0	0	6 14466E-13	0

TABLE 7-20 RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL C) MISSOURI ELECTRIC WORKS

																^-	nemicals of Pol	ential Conne							
Exposure Route	Parameter	Symbol	Units	Aroclor-1232	Arockar-1242	Arockor-1248	Arockor-1254	Aroclor-1260 (Filtered)	Benzene	Benzo(a) anthracene	Berzo(a)pyrene	Berzo(b)fluorcarifhene	Berzo(k)fluoranthene	bs(2-Chloroethyl) Ether	bs(2-Chlorokopropyl) Ether	88 (2-ethythexyl phtholodel) (Bromodichloromethane	Carbon Tetrachloride	Choroberzene	Chicrodibromomethane	Chloroform	Nberzo(a.h)Antracene	Nberzotuan	-fexachloro-1,3-Bufadiene	
Vapour intrusion - inhalation	POE concentration POE concentration Inhalation rate Exposure time Exposure trequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Co-si Co-si IR ET ED BW AT _o ATn _o	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00E+00 0.00E+00	3.485-09 3.485-11	0.00E+00 0.00E+00	5.00E-08 5.00E-11	2.08E-06 2.08E-09	2.17E-03 2.17E-06	0.00E+00 0.00E+00	0.00£+00 0.00£+00	5.21E-08 5.21E-11	0.00E+00 0.00E+00	4.115-04 4.115-07		0 00E+00 0.00E+00	1.20E-03 1.20E-06	3.04E-05 3.04E-08	1.52E+00 1.52E-03	,	1.135-02 1.135-05	0 00E+00 0 00E+00	3.25E-04 3.25E-07	7.48E-07 7.48E-10	
	Average Intake from inhalation carcinogens inhalation Cancer Slope Factor Rsk Total carcinogenic risk for exposure route	L CSFma R R₁	mg/kg-d kg-d/mg fraction fraction	0 4.00E-01 0.00E+00	1 9221E-12 4.00E-01 7.69E-13	4.00E-03	2.76164E-12 4.00E-01 1.10E-12	1.14884E-10 4.00E-01 4.60E-11	1.19855E-07 2.73E-02 3.27E-09	0 3 08E-01 0.00E+00	0 3 08£+00 0.00£+00	2.87763E-12 3 08E-01 8.86E-13	0 3 086-01 0.00E+00	2.27007E-08 1 16E+00 2.63E-08		0	6.62795E-08	1.67908E-09 5.20E-02 8.73E-11	8.3954E-05	5.45148E-09	6 24132E-07 8.10E-02 5.06E-08	0 3.08E-01 0.00E+00	1.79507E-08	4.13142E-11 7.70E-02 3 18E-12	16
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Tatal Hazard Index	L RFD _{mA} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.242455-11	0	3.221926-11	1 340325-09	1,39831E-06 8,57E-03 0,000163164	0	0	3 357245-11	0	2.64842E-07	0	0	7.73265-07	1 958935-08	0 000979463 1 705-02 0 057615471	6.36007E-08	7.28153E-06	0	2.09425E-07	4.81999E-10	7.73
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time concinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT,, ATn,	ug/i mg/m3 l/d d/y y kg d	1.5575E-08 1 5575E-08	8.95 -09 8.95-09	5.785E-09 5.785E-09	9,79E-09 9 79E-09	4 005E-07 4.005E-07	0.00000146 0.00000146	6.319E-08 6.319E-08		1.08135E-07 1.08135E-07		0.00000534 0.00000534			2.225E-07 2.225E-07	1.9887E-07 1.9887E-07	0.0000248 0.0000248		0 000001157 0.000001157	5 785E-08 5.785E-08		6.6305E-08	
	Average Intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF. R R,	mg/kg-d kg-d/mg fraction fraction	8 53425E-14 4 00E-01 3.41E-14	4 87671E-14 4 00E-01 1.95E-14	4 00E-01	5.36438E-14 4.00E-01 2.15E-14	2.19452E-12 4 00E-01 8.78E-13	86-12 5.506-02 4.406-13	3.46247E-13 7.30E-01 2.53E-13	3.21863E-13 7.30E+00 2.35E-12	5 92521E-13 7 30E-01 4 33E-13	7.306-02	2.92603E-12 1 10E+00 3 22E-12		5.85205E-11 1 40E-02 8.19E-13	1.21918E-12 6.20E-02 7.56E-14	1.0897E-12 1.30E-01 1.42E-13	1.35895-10	9.99726E-14 8 40E-02 8.40E-15	6.33973E-12	3.16986E-13 7.30E+00 2.31E-12	4.02329E-13	3.63315E-13 7 80E-02 2 83E-14	1.
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hozard Quotient Total Hazard index	Ц RfD。 HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	9 95662E-13	5.6895E-13	3.49617E-13	6.25845E-13 2.00E-05 3.12922E-08	2.56027E-11	9.33333E-11 4.00E-03 2.33333E-06	4 039545-12	3.75507E-12	6.91274E-12	3 98265E-12	3 4137E-11	4.94986E-12 4 00E-02 1.23747E-10	6.8274E-10 2.00E-02 3.4137E-08	2.00E-02	7 00E-04	1.58539E-09 2.00E-02 7.92694E-08	2.00€-02	1 00E-02	3.69817E-12	4 69384E-12 4 00E-03 1.17346E-09	4.23868E-12 2.00E-04 2.11934E-08	8
ermal contact with top water	POE concentration event duration absorbed dose per event Event frequency Exposure trequency Stan surface area Body weight Averaging time Averaging time non-carchogens	C _w tevent Doewer EV ED EF SA BW AT AIn,		1.5575E-08 6 65682E-15	8.95-09 2.911215-14		9 79E-09 5.4531E-14	4.005E-07 1.39319E-11	0.00000146 3.397135-14	6.319E-08 1.16957E-13		1.08135E-07 3.48205E-13		0.000000534 2.15545E-15	7.743E-08 1.09605E-14		2.225E-07 2.67075E-15	1.9887E-07 7.90178E-15	0.0000248 1.30574E-12		0.000001157 1.53981E-14	5.785E-08 2.85093E-13		6.6305E-08 2.34778E-14	
	Absorbed dase for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for expasure route	DAD _e CSF _{dur} R R ₁	mg/kg-d kg-d/mg traction traction	2.4074E-13 4.00E-01 9 63E-14	1 05282E-12 4.00E-01 4.21E-13	4 00E-01	1.97208E-12 4.00E-01 7.89E-13	5.03839E-10 4.00E-01 2.02E-10	1.22855E-12 5.50E-02 6.76E-14	4 22967E-12 2.35E-01 9.94E-13	6.740936-12 2.356+00 1.586-11	1 25926E-11 2 30E-02 2.90E-13	7 30E-02			8.68552E-11 1.40E-02 1.22E-12	9.6586E-14 6 20E-02 5 99E-15	2.85763E-13 1 30E-01 3.71E-14	4.72213 E-11	7.3605E-15 8.40E-02 6.18E-16	5.56864E-13	1.031026-11 7.30E+00 7.53E-11	6 97342E-13	8 4906E-13 7.80E-02 6 62E-14	1
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quofient Total Hazard Index	DAD _{no} RfD _{dur} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.80863E-12	1.22829E-11	8.56455E-12	2.30076E-11 2.00E-05 1.15038E-06	5.87812E-09	1 43331E-11 4.00E-03 3.58327E-09	4.93461E-11	7.864426-11	1.46914E-10	8 343265-11	9.094226-13	4 62442E-12 4 00E-02 1 1561E-10	3 805-03	2.00E-02	7 00E-04	6.20E-03		2 006-03	1,20286E-10	4 005-03	9 9057E-12 2.00E-04 4.95285E-08	8
Vapors from tap water ase with a "y")	Concentration in top water Concentration in top water Volatilization factor PCE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight	C. VF C. EF EF ED BW	ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg	1.5575E-08 1.5575E-08)	8.9E-09 8 9E-09 / 4 45E-12	5.78 <i>5</i> E-09	9 79E-09 9 79E-09 4.895E-12	4.005E-07 4.005E-07 9 2.0025E-10	0.00000146 0.00000146 y 7.3E-10	6.319E-08 6.319E-08	5.874E-08	1.08135E-07 1 08135E-07 5 40675E-11		0.00000534 0.00000534 y 2.67E-10	7 743E-08	0 00001068	2.225E-07 2.225E-07 7 1 1125E-10	1 9887E-07	0.0000248 0.0000248 7 1.245-08		0.000001157 0.000001157 5.785E-10	5.785E-08	7.3425E-08 7.3425E-08 7 3.67125E-11	6 6305E-08	ه ۷
	Averaging time carcinogens Averaging time non-carcinogens Average intake from inhalation carcinogens	AT _d ATn _e	d d mg/kg-d	0	2 457865-13	0	2.70365E-13	1 10604E-11	4.032E-11	0	o	2 9863E-12	0	1 47472E-11	0	0	6.14466E-12	5.49208E-12	6.84888E-10	5 03862E-13	3 19522E-11	0	2.02774E-12	1.83111E-12	1.818

TABLE 7-20
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

									Ch	emicals of Pol	ential Concern	•	I	
Exposure Route	Parameter	Symbol	Units	Indeno(1,2,3-cd)Pyrene	2-methy/hapthalene	Naphithalene	Mirobenzene	Mirosodin-propylemine	Pentochlorophenol	Tefrachlaroethene	Trichloroethene	Viryl Chloride	Total	
Vapour intrusion - inhalation	POE concentration POE concentration Inholdfon rate Exposure time Exposure tequency Exposure duration Body weight Averaging time concinogens Averaging time non-carcinogens	Co-in Co-in IR ET EF ED BW AT _e ATn _o	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00E+00 0.00E+00	2.19E-05 2.19E-08	2.75E-04 2.75E-07	6.875-04 6.875-09	0.00E+00 0.00E+00	0.00E+00 0.00E+00	1.31E-03 1.31E-06	2.50E-02 2.50E-05	9.36E-04 9.36E-07		
					1 000/5 00	1 51505 00			_					
	Average intake from inholation carcinogens inhalation Cancer Sope Factor Risk Total carcinogenic risk for exposure route	L _a CSF _{IM} R R ₁	mg/kg-d kg-d/mg fraction fraction	0 3.08E-01 0.00E+00	1,2096E-09	1.5189E-08	3.7945E-10	0	Ū	7.23551E-08 2.10E+00 1.52E-07	1.38082E-06 4.006-01 5.52E-07	5 1698E-08 3 00E-02 1.55E-09	7.958-07	1
	Average Intake from inhalation non-carcinogens inhalation Reference Dose Hazard Corollent Total Hazard Index	L RÍD _{BA} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	1 41126-08	1.77205E-07 8.57E-04 0 000206774	4.42692E-09 5 71E-04 7.75292E-06	0	0	1.405-01	1 61096E-05 1 14E-02 0.001413122	6.03143E-07 2.86E-02 2.10689E-05	419502	•
ingestion of tap water	POE concentration POE concentration Water Ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT., ATn.,	ug/I mg/m3 I/d d/y Y kg d d	6.23E-08 6.23E-08	6.818E-07 6.818E-07	8.2389E-06 8.2389E-06	8.9018E-07 8.9018E-07	7.209E-07 7.209E-07	4.0228E-07 4.0228E-07		0 0000012 0.0000012	3.2485E-08 3.2485E-08		
	Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _o R R	mg/kg-d kg-d/mg fraction fraction	3.4137E-13 7.30E-01 2.49E-13	3.73589E-12	4 51447E-11	4,8777E-12	3.95014E-12 7.00E+00 2.77E-11	2.20427E-12 1.20E-01 2.65E-13	5.19452E-12 5.40E-01 2.81E-12	6.575345-12 4 006-01 2.635-12	1.78E-13 7.206-01 1.28E-13	7.376-11	
	Average intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	KfD. HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	3.98265E-12	4.35854E-11 4 00E-03 1.08963E-08	2.00E-02	5.00E-04	4.60849E-11	2.57165E-11 3.00E-02 8.57218E-10	6.06027E-11 1.00E-02 6.06027E-09	7.67123E-11 3.00E-04 2.55708E-07	2.07667E-12 3 00E-03 6.92222E-10	14164	
Dermal contact with tap water	POE concentration	C.,	ug/l	6.235-08	6.8185-07	8.2387E-06	8.90185-07	7.209E-07	4.02285-07	0.000000948	0.0000012	3.2485E-08	1	
	event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sidn surface area Body weight Averaging time Averaging time non-carcinogens	tevent Daevent EV ED EF SA BW AT AIn _a	hr mg/cm2-ever events/day y d/y cm2 kg d/y d	2.0906E-13	0	7.928885-13	9 58085É-15	3.5181E-15	7.12178E-13	8.33888E-14	2.94245E-14	2.67062E-16		
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Rbk Total carcinogenic rsk for exposure route	DAD _c CSF _{der} R R ₁	mg/kg-d kg-d/mg fraction fraction	7.56054E-12 2.30E-01 1.74E-12	0	2.86743E-11	3.46485E-13	1 2723E-13 1 80E+00 2.29E-13	2.57555E-11 1.20E-01 3.09E-12	3.0157E-12 5.40E-01 1 63E-12	1.06412E-12 6 00E-02 6.38E-14	9,65812E-15 7,20E-01 6,95E-15	3.09E-10	
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quofient Total Hazard Index	DAD _{no} RfD _{der} HQ Hi	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	8.820636-11	4 005-03	3.34534E-10 2.00E-02 1 67267E-08	4.04233E-12 5.00E-04 8.08466E-09	1,48435E-12	3.00E-02	3.51832E-11 1.00E-02 3.51832E-09	4 50E-05	3.00E-03	2.236-06	
Vapors from tap water	Concentration in top water Concentration in top water	<i>د.</i>	ug/l mg/m3	6.23E-08 6.23E-08	6.818E-07 6.818E-07	8.2389E-06 8.2389E-06	8.9018E-07 8.9018E-07	7.209E-07 7.209E-07	4.0228E-07 4.0228E-07	0.000000948 0.000000948	0.0000012 0.0000012	3.2485E-08 3.2485E-08		
l. those with a 'Y'i	Volatilization factor POE concentration Inhalation rate Exposure fine Exposure frequency Exposure duration Body weight Averaging time carcinogens	VF Co-top IR ET ED BW AT _e	dimensionless mg/m3 m3/hr h/d d/y y kg d	0	y 3 40 9 5-10	y 4 11945E-09	y 4.4509E-10	0	٥	y 4.74E-10	y 6E-10	y 1.62425E-11		
	Averaging time non-carcinogens Average intake from inhalation carcinogens	Aĭn _o ل	d mg/kg-d	0	1,892905_11	2 27579F-10	2.45836E-11	0	0	2 618045-11	3.31397F-11	8 9712E-13	1	

TABLE 7-20
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

							·									Chemicals	of Potential C	oncem						
rce Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter Inhalation Cancer Slope Factor	Symbol CSF _{ink}		Non Contaminant- Specific Parameters	03501 1,1,22-Tetrachloroethane	27.17.2-inchloroethane	1,1-Dichloroethane	Total 1,2 Dichlaroethene	1,2.4 Trichlorobergene	CO-2015	1,2-Dichloropropome	1 3-Dichlorobergene	2.20E-02	22.4.6-Trichlorophenol	2 4-Draftcholvene	2,6-Divitrotolvene	2-Chlorophenol	3.3-Dichlarabenzidine	4,6-Dhilto-2-Methyl Phenol	4.00E-01	4 00
				Risk	R	fraction		1.255-12	2315-14				6.49E-14			1.105-11	0.00E+00						2.465-13	0.00
				Total carcinogenic risk for exposure route	R,	fraction																		
				Average intake from inhalation non-carcinogens	Ļ	mg/kg-d		7 17022E-11	4.73139E-12	9.45858E-09	3 93074E-10			4 44464E-12			0	0	0	2.746045-09	0	0	7.16877E-12	:
				Inhalation Reference Dose	RfD _{rek}	mg/kg-d						1 145-03				2.30E-01								
				Hazard Quofient Total Hazard Index	HQ HI	mg/kg-d mg/kg-d						5.53944E-07	5.93984E-09	3.8988E-09		2.53551E-08								
				TORS REZULT FROM		mg/kg-d																		
	Surface Water	Creek	incidental ingestion of creek water		C.,	ug/l								0.000138016				0 001055151		2 0.001482685				
				POE concentration	C₌. IR	mg/m3 I/d	0.05	3.87145E-05	0.00014692	0.005107025	0 168484251	0.003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.07239E-05	0 001055151	0 0001112	2 0.001482685	0.000124381	7.99002E-05	4.276E-07	2.47
				Water Ingestion rate Exposure frequency	# #	d/y	52																	
				Exposure duration	ED	y ,	-6																	
				Body weight	BW	kg	15																	
				Averaging time carcinogens	AT _a	d	25.550																	
				Averaging time non-carcinogens	Aīn _e	d	2.190																	
				Average intake from ingestion carcinogens	l _e	mg/kg-d		1.57586E-12	5 9803E-12	2.07879E-10	6.85807E-09	1.39035E-10	1 05108E-11	5.61785E-12	1.128495-08	1.35446E-08	3.28583E-12	4,294945-11	4.52634E-12	2 6.03519E-11	5.06286E-12	3.2523E-12	1.74052E-14	10
				Ingestion Concer Slope Factor	C2F ₀	kg-d/mg		2.006-01	5.705-02				9 105-02			2.406-02	1 106-02		6.70E+00		4.50E-01		4 00E-01	
				Risk	R	fraction		3.15E-13	3.415-13				9 56E-13	3.82E-13		3.25E-10	3.61E-14	2,925-11	3.03E-11	į.	2.28E-12		6. 96E-15	5
				Total carcinogenic risk for exposure route	R,	traction																		
				Average Intake from Ingestion non-carcinogens	6	mg/kg-d		1 83856-11	6.97701E-11	2.42525E-09	8.00108E-08	1 62207E-09	1.22626E-10	6.55416E-11	1.31657E-07	1.5802E-07	3.83347E-11	5,01076E-10	5.28073E-11	7 04106E-10	5.90667E-11	3.79435E-11	2.030615-13	1.17
				Ingestion Reference Dose	RfD.	mg/kg-d		6 00E-02	4 00E-03	1 00E-01	1 00E-02	1 00E-02	2.00E-02	1 105-03	3.00E-02	3.005-02	1.00E-04	2 00E-03	1 005-03	5.00E-03		1.005-04	7 00E-05	,
				Hazard Quotient	HQ	mg/kg-d		3 064 165-10	1.74425E-08	2.42525E-08	8.00108E-06	1 62207E-07	6.131316-09	5 95833E-08	4 38857E-06	5.26733E-06	3.83347E-07	2.50538E-07	5.28073E-08	8 I 40821E-07		3.79435E-07	2.90087E-09	
		· · · · · · · · · · · · · · · · · · ·		Total Hazard Index	HI	mg/kg-d																		
			Dermal contact with creek water	POE concentration	C _w	ug/l		3.871458-05	0.00014692	0.005107025	0.168484251	0 003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.07239E-05	0 001055181	0.0001112	2 0.001482685	0.000124381	7.99002E-05	4.276E-07	2.47
				event duration	tevent	hr	2																	
				absorbed dose per event Event frequency	Doseven EV	nt mg/cm2-event events/day	,	1.01297E-12	2,999415-12	9.41817E-11	3.521195-09	9,32615E-10	2.97547E-12	3.08949E-12	5.39677E-08	4.70013E-08	1.27568E-11	1.3531E-11	0	0 3.66143E-11	1.04164E-11	1.13569E-12	0	149
				Exposure duration	ED ED	v evenis/GCy	6																	
				Exposure frequency	EF	d/y	.52																	
				Skin surface area	SA	cm2	6,600																	
				Body weight	BW AT	kg	15 25.550																	
				Averaging time Averaging time non-carcinogens	∧i Aĭn₀	d/y d	2.190																	
				Absorbed dose for carcinogens	DAD _o	mg/kg-d					1.89193E-08	5.01093E-09			2.89968E-07					1.96728E-10				
				Dermal Cancer Slope Factor Piet	CSF _{der}	kg-ci/mg fraction		2.00E-01 1.09E-12	5 70E-02 9.19E-13				9,10E-02 1,45E-12			2.40E-02 6.06E-09			6,70E+00 0 00E+00		4 50E-01 2.52E-11		4.00E-01 0.00E+00	
				Total carcinogenic risk for exposure route	Ř,	fraction		12071-12	7.171-10				1,400-12	1.131-12		0.002-07	7.04L-13	3.026-11	O LOLIO	,	2.325-11		SSSSC-100	
					•																			
				Absorbed dose for non-carcinogens	DAD _∞	mg/kg-d		6.34932E-11	1.88018E-10						3.38296E-06			8.48192E-10		2.29516E-09				9.39
				Dermal Reference Dose	RfD _{der} HQ	mg/kg-d		6 006-02	4.00E-03		1 00E-02				3.00E-02 0 000112765	3.00E-02 9.8209E-05		2.00E-03 4.24096E-07				1.005-04	7.00E-05	
				Hazard Quotient Total Hazard Index	HI.	mg/kg-d mg/kg-d		1 05822E-09	4 /00446-08	a.703//E-08	£20/256-05	5.84609E-06	7-3230/6-07	1 /60372-0/	0 0001 12/65	7.02070-05	r.77630E-U6	4.240700-07	U	0 4 59033E-07		7.11907E-07	0	
			Carcinogenic risk - all routes (detect	ed organics)		- -					_		***											
			Carcinogenic rsk - all routes (undete TOTAL CARCINOGENIC RSK - ALL RO		Siem Di	fraction		8 80E-11	2.94E-10	0 00E+00	0 00E+00	0 00E+00	9 68E-10	1 525-12	0 005+00	1.39E-08	8 39E-13	8 78E-11	5 38E-11	0 00E+00	2.99E-11	0 00E+00	1.80E-12	
			Non-Carcinogenic risk - all routes (de		- CALLERY	, COLON		3 001-11	2/71-10	0 00E+00	0 00L+W		, aa-10	, 324-12	U 00E-00		0 0/1-10	370L-11	530211		2.771.711		-2001-12	
			Non-Carcinogenic risk - all routes (un	idetected organics)																				
			TOTAL NON-CARCINOGENIC HAZARI	DINDEX - ALL ROUTES	Sum Hi	fraction		1 63076-09	6 47029E-08	1 03527E 07	3.00821E-05	0 002318458	8 83941E-05	6.01568E-05	0 000011722	0 000120823	8 89532E-06	6 78207E-07	9 36566E-08	3 7 20706E-07	0	1 40443E-06	2.32205E-08	

Notes.

1- ug/l = micrograms per Uter

2- ug/m3 = micrograms per cubic meter

3- h/d = hous per day

4- l/d = ften per day

5- d/y = days per year

6- y = year

7- kg = ktlogram

8- d = day

9- hr = hour

9. he = hour
10- mg/kg-d = miligrams per kliogram per day
11- kg-d/mg = kliograms per day per miligram
12- cm2 = square centimeter
13- m3/hr = cubic meter per hour
14- mg/ms = miligrams per cubic meter
15- mg/cm2-event = miligrams per square centimeter per event
16- mg/cm3-event = miligrams per cubic centimeter per event

TABLE 7-20 RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL C) MISSOURI ELECTRIC WORKS

																CI	emicals of Po	tential Concer	T)						
Exposure Route	Parameter	Symbol		Aractor-1232	Arocker-1242	Arocior-1248	Aroclor-1254	Aroclor-1260 (Filtered)	Benzene	Berzo(d) anthracene	Berzzo(d)pyrene	Benzo(b)fluoranthene	Berzzo(k) fluorcarithene	bs(2-Choroeffty) Ether	bs(2-Charokopropyi) Ether	Bis (2-ethylhexyl phthodole)	Bromodichloromethane	Carbon Tetrachloride	Charoberzene	Chlorodibromomeritione	Chloroform	Diberzo(a.h).Antfracene	Dberzofuran	Hexachloro-1,3-Butadiene	
	Inhalation Cancer Slope Factor Risk	CSF _{trib}	kg-d/mg fraction	4.00E-01 0.00E+00	4 006-01 9.835-14	4 00E-01 0.00E+00	4 00E-01 1 08E-13	4 006-01 4 426-12	2.73E-02 1.10E-12	3.08E-01 0.00E+00	3 06E+00 0 00E+00	3 08E-01 9.20E-13	3 08E-01 0 00E+00	1 16E+00 1.71E-11				5.20E-02 2.86E-13			8.10E-02 2.59E-12	3 08E-01 0 00E+00		7 70E-02 1.41E-13	
	Total carcinogenic risk for exposure route	Ř,	fraction	OLOUE - CO	7200-14	0.002-00	1 002-13	4 441-12	1.104-12	0.002-00	0002-00	7.20L-13	0 002-00	1.712-11				2000-13			237511	0002-00		1.410-13	2730
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quofient Total Hazard Index	L RfD _{mh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.86751E-12	0	3.15426E-12	1.29038E-10	4.704E-10 8.57E-03 5.48891E-08	0	0	3 484025-11	0	1 72055-10	0	0	7 16877E-11	6.40743E-11	7 990365-09 1 705-02 4 700215-07	5.87839E-12	3.727765-10	0	2.36569E-11	2.13629E-11	2.12196
tricidental ingestion of creek water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time correlangers Averaging time non-carcinogens	C. R EF ED BW AT ₀ ATr _e	ug/i mg/m3 Vd d/y y kg d	2.99297E-07 2.99297E-07		1 11168E-07 1,11168E-07			0.003648704 0.003648704								0 002226 0 002226	3 4596E-05 3.4596E-05			0 011575497 0.011575497			1.27415E-06 1.27415E-06	
	Average intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R	mg/kg-d kg-d/mg traction traction	1.21827E-14 4.006-01 4.87E-15	6.96157E-15 4.00E-01 2.78E-15	4 00E-01	7.65772E-15 4.00E-01 3.06E-15	4.00E-01	1.48519E-10 5.50E-02 8 17E-12	4.94271E-14 7.30E-01 3.61E-14	4 59463E-14 7.30E+00 3.35E-13	3.71993E-16 7.30E-01 2.72E-16	2.14317E-16 7.30E-02 1.56E-17	1 10E+00	3 15325E-11	8 35388E-12 1 40E-02 1 17E-13	9 06082E-11 6 20E-02 5 62E-12	1.40821E-12 1 30E-01 1.83E-13	5.53403E-08	7,43006E-12 8,40E-02 6,24E-13	4 71175E-10	1 99009E-16 7.30E+00 1.45E-15	5.74329E-14	5 18637E-14 7,80E-02 4,05E-15	1 60E
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazzard Quotient Total Hazzard Index	l, RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.42132E-13	8.12183E-14	5.27919E-14	8.93401E-14 2 00E-05 4 467E-09	3.654825-12	1 73272E-09 4 008-03 4.33179E-07	5.7665E-13	5.36041E -13	4.339926-15	2.50037E-15	2.5371E-09	3.67879E-10 4 00E-02 9 19697E-09	2.00E-02	1.0571E-09 2.00E-02 5.28548E-08	7.00E-04	6.45637E-07 2.00E-02 3.22819E-05	2.00E-02	1 00E-02	2.32177E-15	4 006-03	6 05076E-13 2.00E-04 3.072538E-09	8 000
Dermal contact with creek water	POE concentration	C.	ug/l	2.99297E-07	1 71027E-07	1.111686-07	1.8813E-07	7.69621E-06	0.003648704	1.21429E-06	1 12878E-06	9 13887E-09	5.26519E-09	0.005342537	0 000774668	0.000205232	0.002226	3.4596E-05	1.35956262	0.000182537	0.011575497	4.889116-09	1,41097E-06	1.2741\$5-06	4.00642
	event duration absorbed dose per event Event frequency Exposure trequency Skin surface area Body weight Averaging time non-carcinogens	tevent Doever EV ED EF SA BW AT ATn _e	hr mg/cm2-ever events/day y d/y cm2 kg d/y d/y	1 8090 7E-13	7.911585-13	5.51653E-13	1.48195E-12	3.78617E-10	1.36534E-10	3.178445-12	5.06557E-12	4 16175E-14	2 36346E-14	3.17633E-11	1 55078E-10	6.52686E-11	3.778716-11	1.99165E-12	1 077526-07	2.8797E-12	2.345035-10	3 40744E-14	5.24028E-13	6.38038F-13	3.86609E
	Absorbed dose for caranogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{der} R R _i	mg/kg-d kg-d/mg fraction fraction	9.72014E-13 4.00E-01 3.89E-13	4.005-01	4 006-01	7 96249E-12 4.00E-01 3 18E-12	4 00E-01	7.33597E-10 5.50E-02 4 03E-11	1.70778E-11 2.35E-01 4.01E-12	2.72173E-11 2.35E+00 6.40E-11	2.23611E-13 2.306-02 5.14E-15	1.26989E-13 7.30E-02 9 27E-15	1 10E+00	8 33234E-10	3 50688E-10 1 40E-02 4 91E-12	2.0303E-10 6.20E-02 1.26E-11	1.07011E-11 1.30E-01 1.39E-12	5.78949E-07	1.54726E-11 8.40E-02 1.30E-12	1.259985-09	1.83082E-13 7.30E+00 1.34E-12	2.8156E-12	3.42817E-12 7.80E-02 2.67E-13	2.07725E 1 60E- 3.32E
	Absorbed dase for non-carcinogens Dermal Reference Dase Hazard Quoffent Total Hazard Index	DAD _{mo} RfD _{cer} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 13402E-11	4 95937E-11	3 45803E-11	9.28958E-11 2.00E-05 4 64479E-06		8.55864E-09 4 00E-03 2.13966E-06	1.99245-10	3.17535E-10	2.60879E-12	1.481545-12	1 99 108 E-09	9 72106E-09 4.00E-02 2.43026E-07	3.80€-03	2.36868E-09 2.00E-02 1 18434E-07	7 00E-04	6.20E-03	2.00E-02	2.00E-03	2.13595F-12	4 00E-03	3.99954E-11 2.00E-04 1 99977E-07	2.42345E 8 005 3.02932E
Carcinogenic risk - all routes (detecte Carcinogenic risk - all routes (undete	cted organics)	Ciam Bi	fraction	5 245-13	3 01E-12	1 495-12	5 21E-12	1 07E-09	3 325-09	5 30E-12	8 25E-11	2.53E-12	5 56E-13	2.68E-08	0 00E+00	7 06E-12	1835-11	8.945-11	0 00E+00	1 635 14	5 06E-08	7 89E-11	0 00E+00	3 69E-12	- 1271
OTAL CARCINOGENIC RISK - ALL ROL Non-Carcinogenic risk - all routes (de Non-Carcinogenic risk - all routes (un OTAL NON-CARCINOGENIC HAZARO	tected organics) detected organics)		fraction	3 240 3	3016-12		5 83093E-06		0.000165818	3 300-12	0.23C-11	230-12	3 305-13			1.382341-06							1 1587E-08		

TABLE 7-20 RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL C) MISSOURI ELECTRIC WORKS

			- <u> </u>						Ch	emicals of Pot	ential Concer	1		
Exposure Route	Perameter	Symbol	Un it s	indeno(1,2,3-cd)Pyrene	2-methymapthalene	Acphifhdene	Mhoberpene	Nifrosod-n-propykanine	Pentachtorophenol	errochloroethene	irichloroeithene	Vinyl Chloride	lotal	
	Inhalation Cancer Slope Factor	CSF _{Inh}	kg-d/mg	3.08E-01						2.10E+00	4 005-01	3 00E-02		
	Rsk	R	traction	0 00E+00						5.50£-11	1.33E-11	2.69E-14	1	
	Total carcinogenic risk for exposure route	R,	traction										い事務	
	Average Intake from inhalation non-carcinogens	L	mg/kg-d	0	2 19675-10	2.65451E-09	2.86809E-10	0	0	3.05438E-10	3 86635-10	1 04664E-11	İ	
	Inhalation Reference Dose	RfD _m	mg/kg-d	-	21701210	8.57E-04	571E-04	•	•	1 40E-01	1 14E-02	2.86E-02	- 1	
	Hozard Quotient	HQ	mg/kg-d			3.097445-06	5.022926-07			218176-09	3.39149E-08		l	
	Total Hazard Index	HI	mg/kg-d			33077 441-00	3.032/25-0/			21017207	3371472-00	3 63730E-10	C/86	
	TOTAL FRANCISCO													
ncidental ingestion of creek water		Ç.,	ug/l	5.26519E-09				0 007212425					- 1	
	POE concentration	C.	mg/m3	5.26519E-09	0.0001186	0 001433262	0.000154858	0.007212425	7.73042E-06	0.000841116	0.029336582	0.000325004	I	
	Water ingestion rate	IR .	Vd										Į.	
	Exposure frequency	EF ED	d/y										- 1	
	Exposure duration	ED BW	y										- 1	
	Body weight Averaging time carcinogens	AT _o	kg d											
		Aīn.	d										- 1	
	Averaging time non-carcinogens	∧ırı¢	•										1	
	Average Intake from Ingestion carcinogens	i,	mg/kg-d	2.14317E-16	4.82755E-12	5.83402E-11	6.30342E-12	2.93578E-10	3.14663E-13	3.42372E-11	1.19413E-09	1 322916-11	1	
	Ingestion Cancer Slope Factor	CSF _e	kg-d/mg	7.305-01				7 00E+00	1,205-01	5 40£-01	4 00E-01	7 205-01	- 1	
	Risk	R	fraction	1.56E-16				2.06E-09	3.78E-14	1.856-11	4,78E-10	9.52E-12	- 1	
	Total carcinogenic risk for exposure route	R,	fraction									[3250	
	A compa balance from largerities and a semilar comp			2.50037E-15	5.63215E-11	6.806365-10	7.354E-11	3.42508E-09	2 /7107E 19	3,99434E-10	1 39315E-08	1.54346-10	- 1	
	Average Intake from Ingestion non-carcinogens	RfD _p	mg/kg-d	23003/6-15	4 00E-03	2.006-02	5 00E-04	3.423000-07	3.005-02	1 006-02	3.005-04	3.006-03	- 1	
	Ingestion Reference Dose Hozord Quotient	HQ	mg/kg-d mg/kg-d			3.40318E-08	1.4708E-07				4 64384E-05		- 1	
	Total Hazard Index	HI	mg/kg-d		1400041-00	3.403100-00	1.4/000-0/		1.223070-10	3.774340-00	4 043040-03	3.1446/1:400	4.926-52	
														_
Dermal contact with creek water	POE concentration	C.	ug/l	5.26519E-09	0.0001186	0 001433262	0.000154858	0.007212425	7.73042E-06	0.000841116	0.029336582	0 000325004	- 1	
	event duration	tevent	hr										1	
	absorbed dose per event	Daeveni		2.49869E-14	0	2.00333E-10	2.52675E-12	5.27912E-11	1 93543E-11	1.04633E-10	1 06659E-09	4 46083E-12	ı	
	Event frequency	EV	events/day										- 1	
	Exposure duration	ED ~	y										- 1	
	Exposure frequency	EF	d/y										- 1	
	Sidn surface area	SA BW	cm2 ka										- 1	
	Body weight	AT	d/y										ı	
	Averaging time Averaging time non-carcinogens	Aīn _o	d d										ı	
	And against the fact of the		-										1	
	Absorbed dose for carcinogens	DAD _c	mg/kg-d	1.34255E-13	0	1.07639E-09	1.35762E-11	2.83647E-10	1.039916-10	5.621956-10	5.73079E-09	2.3968E-11	- 1	
	Dermal Cancer Slope Factor	CSF _{der}	kg-d/mg	2.305-01				1 80E+00	1,205-01	5.406-01	6.00E-02		ı	
	Risk	R	fraction	3.09E-14				5 11E-10	1.25E-11	3.04E-10	3.44E-10	1.735-11	- 1	
	Total carcinogenic risk for exposure route	R,	fraction										8_516-09	
	Absorbed dose for non-carcinogens	DAD	mg/kg-d	1.5663E-12	n	1.25579E-08	1.58389E-10	3,30921E-09	1.213226-09	6.55894E-09	6.68592E-08	2.79627E-10	- 1	
	Dermal Reference Dose	RID	mg/kg-d		4006-03	2.00E-02	5.00E-04		3.00E-02	1 006-02	4 50E-05		ļ	
	Hozord Quotient	HQ	mg/kg-d		700-00		3.16778E-07		4.04408E-08				i	
	Total Hazard Index	HI	mg/kg-d			WATE 175-07	W.10770E-07			VI		. 000/1-00	2.845-03	
														_
arcinogenic risk - atl routes (detecte arcinogenic risk - atl routes (undetec													8 04E-07 3 49E-09	
TAL CARCINOGENIC RISK - ALL ROL		Sum Rt	fraction	2 02E-12	0 00E+00	0 00E+00	0 00E+00	2.59E-09	1 59E-11	1 52E-07	5 53E-07	1 58E-09	8.07E-07	
on-Carcinogenic risk - all routes (de													6 47E-02	
n-Carcinogenic risk - all routes (un					- 1								1 97E-04	
TAL NON-CARCINOGENIC HAZARD	INDEX - ALL ROUTES	Sum HI	fraction	- 1	2 407/75 66	0.000010577	8 84096E-06	- A	5 14364E-08	4 72710E AZ	0.000045005		6.49E-02	

TABLE 7-21
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

							 									Chemicals	of Potential C	oncern						
Source Medium	Барскиге Месйит	Esposure Point	Exposure Route	Parameter	Symbol	Units	Non Contaminant- Specific Parameters	1 2,2-Tetrachlaroethane	1.1.2-Trichkoroethane	1-Oktharoethane	otal 1,2 Dichloroethene	1,2.4 Trichlorobenzene	1,2-Dichlaroethane	(2-Dichlaropropane	3-Dichlorobenzene	./-Dichloroberzene	A.6-Trichlorophenol	2.4-Dinitrotokone		Chlorophenol	3-Dichloroberzidine	6-Diritto-2-Meltryl Phenol	Aroctor-1016	vocka-1221
Groundwater	Air	Indoor air	Vapour intrusion - inhalation	POE concentration POE concentration Inhotorion rate Exposure fine Exposure duration Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Coss Coss IR ET ED 8W ATo ATo	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25.550 2.190	7.59E-06 7.59E-09	9.30E-05 9.30E-08	2.27E-03 2.27E-06	7 42E-03 7 42E-06	4.09E-03 4 09E-06	1 925-04 1 925-07	1.06E-04 1.06E-07	8.90E-03 8.90E-06	6.16E-03 6.16E-06	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	3.06E-04 3.06E-07	0 00E+00 0 00E+00	0 00E+00 0 00E+00		0.00E+00 0.00E+00
				Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _{Inh} R R _i	mg/kg-d kg-d/mg fraction fraction		4.19218E-10 2.03E-01 8.51E-11	5.13666E-09 5.70E-02 2.93E-10	1.253796-07	4 09828E-07	2.25902E-07	1.06047E-08 9.10E-02 9.65E-10	5.85468E-09	4.91573E-07	3.40235E-07 2.20E-02 7.49E-09	0 1 09E-02 0.00E+00	0	0	1.690135-08	0	0	3.73374E-12 4 00E-01 1 49E-12	0 4 005-01 0:005+00
				Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	K RID _{EN} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4 89087E-09	5.99277E-08	1.46275E-06	4.78133E-06	2.63553E-06 1.14E-03 0.002311867	1 405-03	6.83047E-08 1 14E-03 5.99164E-05	5 735015-06	3 96945-06 2.306-01 1 72583E-05	0	0	0	1.97181E-07	0	0	4.35603E-11	0
	Groundwater	Tap Water	ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C. C. IR EF ED BW AT. ATIN.	ug/I mg/m3 Vd d/y y kg d d	1 350 6 15 25.550 2.190	2 22545E-07 2.22545E-07		0.000029357 0 000029357	0 00000122 0 00000122	0.00000196 0.00000196	2.5815-08 2.5815-08	1.3795E-08 1.3795E-08	0.0000164 0.0000164	0.0000181 0.0000181	4 6403E-07 4 6403E-07		0.000000639 0.000000639	0.000008523 0.000008523	7.14985E-07 7 14985E-07		2.225E-08 2.225E-08	
				Average Intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for expasure route	CSF ₀ R R ₁	mg/kg-d kg-d/mg fraction fraction		1.21942E-12 2.50E-01 2.44E-13	8.04658E-14 5.70E-02 4.59E-15	1. 6086E-10	6.68493E-12	1073975-11	1.41425E-13 9 10E-02 1.29E-14	7.5589E-14 6.80E-02 5.14E-15	8 98636-11	9 91781E-11 2.40E-02 2.38E-12	2.54263E-12 1 10E-02 2.80E-14	5.7789E-13 6.80E-01 3.93E-13	3.50137E-12 6.70E+00 2.35E-11	4.670146-11	3.91773E-12 4.50E-01 1 76E-12	2.51668E-12	1.219186-13 4.006-01 4.886-14	4.00E-01
·				Average intake from ingestion non-carcinogens ingestion Reference Dose Hazzard Quotient Total Hazard Index	ե RfD, HQ Hi	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	9.38767E-13 4 00E-03 2.34692E-10	1.8767E-09 1 00E-01 1.8767E-08	7 79909E-11 1.00E-02 7 79909E-09	1.005-02	2.00E-02	1 10E-03	1 0484E-09 3.00E-02 3 49467E-08	1 15708E-09 3 00E-02 3 85693E-08	1.006-04	6.74205E-12 2.00E-03 3.37103E-09	4.08493E-11 1 00E-03 4.08493E-08	5.44849E-10 5.00E-03 1.0897E-07	4 57068E-11	1 00E-04		8.24977E-13
			Dermal contact with tap water	POE concentration	C.	ug/l		2.22545E-07	1.4685E-08	0.000029357	0.00000122	0 00000196	2.581E-08	1 3795E-08	0 0000164	0.0000181	4.6403E-07	1 05465E-07	0.000000639	0.000008523	7 14985E-07	4.59295E-07	2.225E-08	1.2905E-08
				event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sidn surface area Body weight Averaging time non-carcinogens	tevent Doever EV ED EF SA BW AT ATn _o	hr mg/cm2-eve events/day y d/y cm2 kg d/y d/y d	nt 1 6 350 6.600 15 25.550 2.170	4 117115-15	2.01787E-16	3.483616-13	1.63529E-14	3,78416-13	1.9079E-16	2.00333E-16	2.212136-12	1 77045E-12	5.185246-14	9.56334E-16	0	1 408165-13	4.233955-14	4.61624E-15	0	5.51565E-15
				Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{der} R R _t	mg/kg-d kg-d/mg traction traction		1 48893E-13 2.00E-01 2.98E-14	5.70E-02	1.259836-11			6.89979E-15 9 10E-02 6.28E-16	6.80E-02 4.93E-16		6.40271E-11 2.40E-02 1.54E-12	1 105-02 2.065-14	8 006-01	6.70E+00	5.092516-12	1 53118E-12 4 50E-01 6.89E-13	1 66944E-13	0 4.00E-01 0.00E+00	1.9947E-13 4.00E-01 7.98E-14
				Absorbed dase for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{dar} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	8.51374E-14 4 00E-03 2.12844E-11	1 00E-01	1 005-02	1 59658E-10 1 00E-02 1.59658E-08	2.00E-02	1 10E-03	3 00E-02	3 00E-02	1 005-04	4.03494E-13 2.00E-03 2.01747E-10	0 1 00E-03 0	5 94126E-11 5 00E-03 1.18825E-08	1.78638E-11	1.94768E-12 1 00E-04 1 94768E-08		2.32715E-12
(only calculated (Air for COPC with Henry's	indoor Air : Law > 1e-5 atm.m3/n	Vapors from tap water	Concentration in top water Concentration in top water Volatilization factor POE concentration inhalation rate Exposure time Exposure timeuency Exposure duration Body weight Averaging time carcinogens	C., C., VF C., Lup IR ET ET ED BW AT.,	ug/l mg/m3 dimensionles mg/m3 m3/hr h/d d/y y kg d	0 0005 y 0.42 24 350 6 15 25.550	2.22545E-07 2.22545E-07 1 11273E-10	1 4685E-08 y	0.000629357 0.000029357 y 1.46785E-08	0.00000122 y	0 00000196 Y	2.581E-08	1.3795E-08	0.0000164 0.0000164 7 8.2E-09	0.0000181 0.0000181 9.05E-09				0.000008523 0.000008523 y 4.2615E-09		4 59295E-07		
				Averaging time non-carcinogens Average intake from inhalation carcinogens	ATn _o	d mg/kg-d	2,190	6 1459E-12	4.05547E-13	8.1073AF-10	3.36921E-11	5.41282E-11	7 1278E-13	3 80969E-13	4.5291E-10	4 99858E-10	0	0	0	2.35375E-10	0	0	6 14466E-13	0

TABLE 7-21
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

			_													<u> </u>	ambot of B-4	anhal Casa							
Exposure Route	Parameter	Symbol	Urāls	Arockor-1232	Arocka-1242	Aroctor-1248	Arockr-1254	Arockor-1260 (Filtered)	Вептавле	Berzo(a) anitracene	Berzo(d)pyrene	Berzo(b)fluoranthene	Benzo(k) fluoranthene	bs(2-Chloroethyl) Ether	bs(2-Chlorosopropyl) Ether	8s (2-ethylhexyl phtholote)	emicals of Pot	Carbon Tetrachioride	Chlorobergene	Chlorodiscomomethane	Chloroform	Diberzo(a.h)Anthracene	Diberzofuran	Hexachloro-1 3-Butodlene	Hawachlorobergere
Vapour intrusion - inhalation	POE concentration POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Co-M Co-M IR ET EF ED BW ATO ATO	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00E+00 0.00E+00	3 48E-08 3.48E-11	0 00E+00 0.00E+00	5.006-08 5.006-11	2.08E-06 2.08E-09	2.17E-03 2.17E-06	0.00E+00 0.00E+00	0.00÷400 0.00÷400	5.21E-08 5.21E-11	0.00E+00 0.00E+00	4.11E-04 4.11E-07		0.00E+00 0.00E+00	1.20E-03 1.20E-06	3.04E-08		9 87E-05 9 87E-08	1.13E-02 1.13E-05	0.00E+00 0.00E+00		7 48E-07 7 48E-10	1.206-0 1.206-0
	Average intake from inhalation carcinogens inhalation Cancer Sope Factor Risk Total carcinogenic risk for exposure route	La CSF _{IMA} R R ₁	mg/kg-d kg-d/mg fraction fraction	0 4 00E-01 0.00E+00	1 9221E-12 4.00E-01 7.69E-13	0 4 006-01 0.000+00	2.76164E-12 4 00E-01 1.10E-12	1.14884E-10 4 00E-01 4.60E-11	1.19855E-07 2.73E-02 3.27E-09	0 3.08E-01 0.00E+00	0 3.08E+00 0.00E+00	2.87763E-12 3 08E-01 8.86E-13	0 3.08E-01 0.00E+00	2.27007E-08 1 16E+00 2.63E-08		0	6.62795E-08	1 67908E-09 5.20E-02 8.73E-11	8.3954E-05	5.45148E-09	6.24132E-07 8.10E-02 5.06E-08	0 3.08E-01 0.00E+00	1.79507E-Q8	4.13142E-11 7.70E-02 3 18E-12	1 61E+0
	Average Infake from Inhalaffon non-carcinogens Inhalaffon Reference Dose Hazard Guotient Total Hazard Index	i, RfD _{inh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.24245E-11	0	3.22192E-11	1.340325-09	1 39831E-06 8.57E-03 0.000163164	0	0	3.357245-11	0	2.648426-07	0	0	7 73265-07	1 95893E-06	0.000979463 1 70E-02 0 057615471	6.36007E-08	7.28153E-06	0	2.09425E-07	4.81999E-10	7.7326E-1
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure trequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw Cw IR EF ED BW ATo ATo	ug/i mg/m3 l/d d/y y kg d d	1.5575E-08 1 5575E-08	8.9E-09 8.9E-09	5.785E-09 5.785E-09	9.79E-09 9.79E-09	4.005E-07 4 005E-07	0.00000146 0.00000146	6.319E-08 6.319E-08	5.874E-08 5.874E-08	1.08135E-07 1.08135E-07		0.000000534 0.000000534			2.225E-07 2.225E-07	1.9887E-07 1 9887E-07			0.000001157 0.000001157	5.785E-08 5 785E-08		6.6305E-08 6.6305E-08	6.586E-01
	Average intake from ingestion carcinogens ingestion Concer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R	mg/kg-d kg-d/mg fraction fraction	8 53425E-14 4.00E-01 3.41E-14	4.87671E-14 4.00E-01 1.95E-14	3 16986E-14 4 00E-01 1.27E-14	5.36438E-14 4 00E-01 2 15E-14	2.19452E-12 4 90E-01 8.78E-13	6E-12 5.50E-02 4.40E-13	3.46247E-13 7.30E-01 2.53E-13	3.21863E-13 7 30E+00 2.35E-12	5 92521E-13 7.30E-01 4.33E-13	3 41375-13 7 305-02 2.495-14	2.92603E-12 1,10E+00 3.22E-12		5.85205E-11 1 40E-02 8.19E-13	1.219186-12 6.205-02 7.565-14	1.0897E-12 1.30E-01 1.42E-13	1.3589E-10	9 99726E-14 8.40E-02 8.40E-15	6.33973E-12	3.16986E-13 7 30E+00 2.31E-12	4.023295-13	3 63315E-13 7 80E-02 2 83E-14	1 60E+0
	Average Intake from Ingestion non-carcinogens Ingestion Reference Dose Hozard Quotient Total Hazard Index	l, RFD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	9 956626-13	5 6895E-13	3.69817E-13	6.25845E-13 2.00E-05 3.12922E-08	2.56027E-11	9.33333E-11 4.00E-03 2.33333E-08	4.03954E-12	3.75507E-12	6912745-12	3 98265E-12	3.41375-11	4.94986E-12 4 00E-02 1.23747E-10	6.8274E-10 2.00E-02 3.4137E-08	2.00E-02	7.00E-04		1 16635E-12 2.00E-02 5 83174E-11	1 006-02	3 69817E-12	4 69384E-12 4 00E-03 1 17346E-09	4.23868E-12 2.00E-04 2.11934E-08	8.006-0
Dermal contact with tap water	POE concentration event duration absorbed date per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	Cw tevent Doever EV ED EF SA BW AT AIn _e	ug/I hr mg/cm2-ever events/day y d/y cm2 kg d/y d	1.5575E-08 6 65682E-15	8.95-09 2.911215-14	5.785F-09 2.02991E-14	9 79E-09 5 4531E-14	4.005E-07 1.39319E-11	0.00000146 3.39713E-14	6.319E-08 1 16957E-13		1.08135E-07 3 48205E-13		0.00000534 2.15545E-15	7 743E-08 1.09605E-14		2.225E-07 2.67075E-15	1.9887E-07 7 90178E-15			0.000001157 1 539816-14	5 785E-08 2.85093E-13		6 6305E-08 2.34778E-14	6.586E-0 4 49388E-1
	Absorbed dose for carcinogers Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{der} R R _i	mg/kg-d kg-d/mg fraction fraction	2.4074E-13 4.00E-01 9.63E-14	1.052825-12 4.005-01 4.215-13	7.34104E-13 4 00E-01 2.94E-13	1 97208E-12 4.00E-01 7.69E-13	5.03839E-10 4.00E-01 2.02E-10	5.50E-02	4.22967E-12 2.35E-01 9 94E-13	6 74093E-12 2.35E+00 1.58E-11	1.25926E-11 2.30E-02 2.90E-13	7.15136E-12 7 30E-02 5.22E-13			8 68552E-11 1 40E-02 1.22E-12	9.6586E-14 6 20E-02 5.99E-15	2.85763E-13 1.30E-01 3.71E-14		7.3605E-15 8.40E-02 6.18E-16	5 56864E-13	1 03102E-11 7.30E+00 7.53E-11	6 973426-13	8 4906E-13 7.80E-02 6.62E-14	1 60E+00
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2 80863/5-12	1 228295-11	8.56455F-12	2.30076E-11 2.00E-05 1.15038E-06	5 87812E-09	1 43331E-11 4.00E-03 3.58327E-09	4.93461E-11	7.86442E-11	1 469145-10	8.34326E-11	9.09422E-13	4.62442E-12 4 00E-02 1.1561E-10	3.80E-03	2.00E-02	7 00E-04	6-20E-03	8.58725E-14 2.00E-02 4.29363E-12	2.00E-03	1.202865-10	4 00E-03	9.9057E-12 2.00E-04 4 95285E-08	8 00E-04
Vapon from tap water	Concentration in top water Concentration in top water Volatilization factor POE concentration Inhalation rate Exposure time Exposure trequency Exposure duration Body weight Averaging time carchogens	C. VF C. VF C. RET EF ED BW AT.	ug/l mg/m3 dimensioniess mg/m3 m3/hr h/d d/y y kg d	1.5575E-08 1 5575E-08 9 0	8.95-09 8.95-09 4 455-12	5.785E-09 5.785E-09 0	9.79E-09 9.79E-09 7 4.895E-12	4 005E-07 4.005E-07 7 2.0025E-10	0 00000146 y		5.874E-08	1.08135E-07 1.08135E-07 / 5 40675E-11		0.000000534 0.000000534 y 2.67E-10	7 743E-08	,	2.225E-07 2.225E-07 1 1125E-10	1 9887E-07 1 9887E-07 / 9 9435E-11	0.0000248 Y		0.0000011 <i>57</i> 0 0000011 <i>57</i> 5.785E-10	5 785E-08	7.3425E-08 7.3425E-08 7 3.67125E-11	6 6305E-08	6.586E-0 6.586E-0 7 3.293E-1
	Averaging time non-carcinogens Average intake from inhalation carcinogens	ATn _e ل	d mg/kg-d	0	2.45786E-13	D	2.70365E-13	1 10604E-11	4.0325-11	0	0	2.9863E-12	0	1.474725-11	0	0	6.14466E-12	5.49208E-12	6 84888E-10	5.03862E-13	3 19522E-11	0	2 027745-12	1.83111E-12	1. 81882 E-12

TABLE 7-21
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

									- Ch	emicals of Pot	ential Concern	ı — — — — — — — — — — — — — — — — — — —		
Exposure Route	Parameter	Symbol	Units	Indeno[1,2,3-cd]Pyrene	2-methy/naphalene	Kophitalene	Virobergene	Nitrosod-n-propykamine	Pentachlaraphenal	Tetrachloroethene	Trichioroeithene	Viryl Chloride	Doba	
														
Vapour Intrusion - Inhalation	POE concentration POE concentration	C**	ug/m3	0 00E+00 0 00E+00	2.19E-05 2.19E-08	2.75E-04 2.75E-07	6.87E-06	0 00E+00	0.00E+00 0.00E+00	1.316-03	2.50E-02 2.50E-05	9.36E-04	1	
	Inhalation rate	C _{o-in} IR	mg/m3 m3/hr	D ODE+OD	2.195-08	2./50-0/	6.87 E-0 9	0 005-00	0.000-00	1,315-06	2.506-05	9.36E-07		
	Exposure time	ET	h/d											
	Exposure frequency	EF	ďγ											
	Exposure duration	ED	y											
	Body weight	BW	kg										ì	
	Averaging time carcinogens	AT _o	d											
	Averaging firme non-carcinogens	Aln _e	d										ì	
	Average intake from inhalation carcinogens	l _e	mg/kg-d	0	1.20965-09	1.5189E-08	3.7945E-10	0	0	7.23551E-08	1.38082E-06	5 1698E-08	İ	
	Inhalation Cancer Slope Factor	CSF _{Int}	kg-d/mg	3.08E-01						2 10E+00	2.00E-02	3 00E-02	ł	
	Risk	R	fraction	0.00E+00						1.52E-07	2.765-08	1.55E-09		
	Total carcinogenic risk for exposure route	R,	fraction									Ł	2,703-67	•
	Average Intake from Inhalation non-carcinogens	L _a	mg/kg-d	0	1.4112E-08		4.42692E-09	0	0	8.441426-07	1 61096E-05		- 1	
	Inhalation Reference Dase	RfD _{pok}	mg/kg-d			8.57E-04	5.71E-04			1.405-01	1 145-02	2.865-02	l	
	Hazard Quofient Total Hazard Index	HQ Hi	mg/kg-d mg/kg-d			U 0000206774	7.75292E-06			6.UZY59E-06	0.001413122	2.10889E-05	6.194.42	,
													~	
Ingestion of tap water	POE concentration POE concentration	رب د	ug/l mg/m3	6.23E-08 6.23E-08	6.818E-07 6.818E-07	8.2389E-06 8.2389E-06	8.9018E-07 8 9018E-07	7.209E-07 7.209E-07	4 0228E-07 4.0228E-07		0.0000012	3.2485E-08 3 2485E-08	1	
	Water Ingestion rate	IR	Vd	6.235-06	0 0100-07	0.23071:-00	0 70100-07	7.2070-07	4302200-07	0.000000746	0.0000012	3 24030-06		
	Exposure frequency	EF	d/y										1	
	Exposure duration	ED.	y ,										- 1	
	Body weight	BW	kg										- 1	
	Averaging time carcinogens	AT _o	ď										- 1	
	Averaging time non-carcinogens	ATn _e	d											
	Average intake from ingestion carcinogens	۱ ₆	mg/kg-d	3.4137E-13	3 73589E-12	4.51447E-11	4.8777E-12	3.95014E-12	2.20427E-12	5.19452E-12	6.57534E-12	1 78E-13	ŀ	
	Ingestion Concer Slope Factor	C2F.	kg-d/mg	7.30E-01				7.00E+00	1.20E-01	5.405-01	2.005-02	7 205-01	1	
	Risk	R	fraction	2.495-13				2.77E-11	2.65E-13	281F-12	1 325-13	1.28E-13		
	Total carcinogenic risk for exposure route	R,	fraction										7 (25-11	
	Average intake from Ingestion non-carcinogens	l _a	mg/kg-d	3 98265E-12	4.35854E-11	5.266B8E-10	5.69065E-11	4 608495-11	2.57165E-11	6 06027E-11	7.67123E-11	2.07667E-12	i	
	Ingestion Reference Dose	RfD _o	mg/kg-d		4 00E-03	2.00E-02	5.00E-04		3 00E-02	1.00E-02	3 006-04	3.00E-03		
	Hazard Quotient	HQ	mg/kg-d		1 08963E-08	2.63344E-08	1.13813E-07		8.57218E-10	6.06027E-09	2.55708E-07	6 92222E-10		
	Total Hazard Index	HI	mg/kg-d										1.517-06	
Dermal contact with tap water	POE concentration	C.	ug/l	6.23E-08	6.818 E-0 7	8.2389E-06	8 9018E-07	7.2096-07	4 02285-07	0.000000948	0.0000012	3.2485E-08	- 1	
	event duration	tevent	hr		_								- 1	
	absorbed dose per event	Daevent		2 0906E-13	0	7.92888E-13	9.58085E-15	3 5181E-15	7 12178E-13	8.33888E-14	2.94245E-14	2.67062E-16	i	
	Event frequency	€V ED	events/day										i i	
	Exposure duration Exposure frequency	EF	d∕y y											
	Skin surface area	SA	cm2										1	
	Body weight	BW	kg										l	
	Averaging firme	AT	d/y										- 1	
	Averaging time non-carcinogens	Aīn _e	d											
	Absorbed dose for cardinagens	DAD	mg/kg-d	7 56054E-12	0	2.86743E-11	3.46485E-13		2.57555E-11	3.0157E-12	1 06412E-12	9.65812E-15	ŀ	
	Dermal Cancer Slope Factor	CSF _{cor}	kg-d/mg	2.305-01				1 80E+00	1.20E-01	5 406-01	3 00E-03	7 20E-01		
	Risk	R	fraction	1.745-12				2.29E-13	3.09E-12	1.63E-12	3.19E-15	6.95E-15		
	Total carcinogenic risk for exposure route	R,	fraction									Į.	3.095-10	
	Absorbed dose for non-carcinogens	DAD _{mo}	mg/kg-d	8.82063E-11		3.34534E-10		1 484356-12		3.51832E-11			į	
	Dermal Reference Dose	RfD _{cter}	mg/kg-d		4 00E-03	2 005-02			3.00E-02	1.00E-02	4 50E-05	3 00E-03	ŀ	
	Hazard Quaffent Total Hazard Index	HQ HI	mg/kg-d mg/kg-d		0	1 67267E-08	6 08466E-09		1.0016E-08	3.51832E-09	2.758835-07	3 75594E-11	2.235-06	
														_
Vapors from tap water	Concentration in top water Concentration in top water	د د	ug/l mg/m3	6.23E-08 6.23E-08				7.209E-07 7.209E-07	4.0228E-07 4 0228E-07	0.000000948				
	Volatilization factor	VF.	dimensionless				9.7018E-0/		- U.L.	V		3.2400E-00 Y	- 1	
those with a 'y')	POE concentration	C	mg/m3	0		4.11945E-09		0	0	4.74E-10		1 62425E-11	- 1	
· · · · · · · · · · · · · · · · · · ·	Inhalation rate	IR.	m3/hr	•			5076-10	·	·	10	10		- 1	
	Exposure time	ĒĪ	h/d											
	Exposure frequency	EF	d/y										- 1	
	Exposure duration	EO.	y]	
	Body weight	BW	kg										1	
	Averaging time carcinogens Averaging time non-carcinogens	Aī. Aīn.	d d										1	
	Tracelland in the treatment of the in	rant le	•										i	
	Average intake from inhalation carcinogens	l _o	mg/kg-d	0	1.882895-11	2 27529E-10	2.458365-11	0	0	2 61804E-11	3.31397E-11	8.9712E-13	- !	
													•	

TABLE 7-21
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE ICE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

																Chemicat	of Potential C	oncem		_				
ce Medšum <u>E</u>	Exposure Medium	Exposure Point	Exposure Route	Parameter Inhalation Cancer Sope Factor	Symbol CSF _{Inh}	Units kg-d/mg	Non Contaminant- Specific Parameters	17.1.22-Teirochloneithane	2012 001 1 2-1/1/chlaroethane	1,1-Dichlamethane	Total 1,2 Dichlaraethene	1,2,4 Inchloroberzene	2-Dichlaroethane	1 2-Dichlareprepane	1,3-Dichlorobenzene	2.20EQ2	73 74 82.4.6-Trichlorophenol	2.4-Dinitro lokuene	2.6-Direttrotokuene	2-Critorophenol	3.3 Dichloroberzidine	4.6-Dinitro-2-Mettry Phenol	4.00E-01	4.0
				Risk	R R.	fraction		1.255-12	2.31E-14				6.49E-14			1 10E-11	0 00E+00						2.465-13	0
				Total carcinogenic risk for exposure route	~	fraction																		
				Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Totat Hazard Index	l _e RfD _{reh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		7 17022E-11	4 73139E-12	9.45858E-09	3.93074E-10	1 145-03			5.28395E-09	5 83167E-09 2.30E-01 2.53551E-08	0	0	0	2.746045-09	0	0	7 16877E-12	
	Surface Water	Creek	incidental ingestion of creek water	POE concentration	C _w	ug/l		3,871456-05	0.00014692	0.005107025	0.148484251	0.003415705	0.000258223	0.000138014	0 277239502	0.332753253	8.07739E-05	0.001055151	0.0001112	0.001482685	0.000124381	7.99002E-05	4.276E-07	24
	Salace World	Good		POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time corcinogens Averaging time non-carcinogens	C., IR EF ED BW AT., ATn,	mg/m3 I/d d/y y kg d	0.05 52 6 15 25,550 2,190					0.003415705								0.001482685			4 2765-07	
				Average intake from ingestion carcinogers ingestion Cancer Stope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction		1.57586E-12 2.00E-01 3 15E-13	5.70E-02		£.85807E-09	1.39035E-10	1.05108E-11 9 10E-02 9 56E-13	6.80E-02	1 12849E-08	1.35446E-08 2.40E-02 3.25E-10		6 80E-01	4 52634E-12 6-70E+00 3 03E-11	6.03519E-11	5.06286E-12 4 50E-01 2.28E-12		1 74052E-14 4 006-01 6.96E-15	
				Average Intake from Ingestion non-carcinogens Ingestion Reference Dase Hazard Quotient Total Hazard Index	KfD ₆ HQ H1	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1 8385E-11 6 00E-02 3 06416E-10	4.00E-03	2.42525E-09 1 00E-01 2.42525E-08	1.00E-02	1 00E-02	2.00E-02			3.00E-02	3.83347E-11 1.00E-04 3.83347E-07	2.00E-03	1.00E-03		5.90667E-11	3.79435E-11 1 00E-04 3.79435E-07	2.03061E-13 7 00E-05 2.90087E-09	
			Dermal contact with creek water	POE concentration	C _w	ug/l		3 87145E-Q5	0.00014692	0.005107025	0 168484251	0.003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.072396-05	0 001055151	0.0001112	0.001482685	0.000124381	7.99002E-05	4.276E-07	2
				event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sidn surface area Body weight Averaging time non-carcinogens	tevent Doewen EV ED EF SA BW AT ATin ₆	hr it mg/cm2-event events/day y d/y cm2 kg d/y d/y d	2 1 6 52 6,600 15 25,550 2,190	1.01289E-12	2.99941E-12	9.41817E-11	3.52119E-09	9.32615E-10	2.97547E-12	3 089496-12	5 39677E-08	4.70013E-08	1.27568E-11	1.35316-11	0	3.66143E-11	1.041646-11	1 135 69E -12	o	1
				Absorbed dose for carcinogens	DADa	mg/kg-d		5 442275-12	1.61158E-11	5.06038F-10	1.891935-08	5.010935-09	1.59872E-11	1.65998F-11	2.899685-07	2.52537E-07	6.8542F-31	7.27022E-11	a	1 96728E-10	5.59472F-11	A 102045-12	0	8.5
				Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	CSF _{der} R R _t	kg-d/mg fraction fraction		2.00E-01 1 09E-12	5 70E-02 9.19E-13				9 10E-02 1 45E-12	6.80E-02		2 40E-02 6.06E-09	1 10E-02	8.00E-01	6.70E+00 0.00E+00		4.50E-01 2.52E-11	·· ·-	4 00E-01 0.00E+00	
				Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{ne} RfD _{cher} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.34932E-11 6 00E-02 1 05822E-09	4 00E-03		1 006-02		2.00E-02	1 105-03	3.38294E-06 3.00E-02 0.000112765	3.00E-02	7 99656E-10 1.00E-04 7 99656E-06	2.00E-03	1 00E-03		6.52951E-10	7.11907E-11 1.00E-04 7.11907E-07	0 7 00E-05 0	9
			Carcinogenic risk - all routes (detecte Carcinogenic risk - all routes (undete	cted organics)																				
			TOTAL CARCINOGENIC RISK - ALL ROL Non-Carcinogenic risk - all routes (de Non-Carcinogenic risk - all routes (un	rtected organics) detected organics)		fraction		8.80E-11	2.94E-10	0 00E+00	0 00€+00	0 00E+00	9 68E-10	1 52F-12	0 00E+00	1.395-08	8 39E-13	8 785-11	5 38E-11	0 00E+00	2,99E-11	0 00E+00	1 80E-12	_
			TOTAL NON-CARCINOGENIC HAZARD			fraction			6 47029E-08														2.32205E-08	

Notes.

1- ug/l = micrograms per Liter

2- ug/m3 = micrograms per cubic meter

3- h/d = hours per day

4- l/d = liter per day

5- d/y = days per year

6- y = year

7- kg = klagram

8- d = day

9- te = hour

10- mor/ford = millergam per day

9- he hour
10- mg/tg-d = milligrams per klagram per day
11- kg-d/mg = klagrams per day per milligram
12- cm2 = square centimeter
13- ms/hr = cubic meter per hour
14- mg/ms = milligrams per cubic meter
15-mg/cm2-event = milligrams per square centimeter per event
16- mg/cm3-event = milligrams per square centimeter per event

TABLE 7-21
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL C)
MISSOUR ELECTRIC WORKS

																a	nemicals of Po	tential Conce	m		_	_			
Exposure Route	Parameter	Symbol	Unëts	Aroclor-1232	Arocka-1242	Arockor-1248	Arockor-1254	Arockor-1260 (Filtered)	Bertzene	Benzo(a) anthracene	Berzo(o) pyrene	Benzo(b)fluoranthene	Berzo(k) fluoranthene	bb(2-CNoroeltryl) Ether	bk(2-Chlorokopropy)) Elfher	88 (2-ethythexyl phthalate)	Bromodichloromethane	Carbon Tetrachloride	Charobergene	Chloroditromomethane	Chlandom	Diberzo(a.h)Antiracene	Obenzofuran	Hexachloro-1,3-Butadiene	
·····	Inhalation Cancer Slope Factor	CSF _{Inh}	kg-d/mg	4.00E-01	4 00E-01	4 00E-01	4 006-01	4.00E-01	2.73E-02	3.086-01	3.08E+00	3.08E-01	3.08E-Q1	1 16E+00				5.20E-02			8.106-02	3 085-01		7.70E-02	
	Risk Total carcinogenic risk for expasure route	R R,	fraction fraction	0.00E+00	9 83E-14	0.00E+00	1 08E-13	4 425-12	1 105-12	0.005+00	0.00E+00	9.206-13	0.00=+00	1.715-11				2.86E-13			2.59E-12	0 00€+00		1 416-13	2.9
	Average intake from Inhalation non-carcinogens Inhalation Reference Dose Hazard Quofient Total Hazard Index	l₀ RfD _m n HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2,867518-12	0	3.15426E-12	1.29038E-10	4 704E-10 8.57E-03 5.48891E-08	0	0	3 484025-11	0	1 72056-10			7.16877E-11	6.40743E-11	7 99036E-09 1 70E-02 4.70021E-07		3.72776E-10	0	2.36569E-11	2.136296-11	2.1219
idental ingestion of creek water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C C IR EF ED BW AT ATn	ug/l mg/m3 Vd d/y y kg d d		1 71027E-07 1.71027E-07	1 11168E-07 1 11168E-07		7 69621E-06 7 89621E-06		1.21429E-06 1.21429E-06		9.13887E-09 9.13887E-09			0.000774668 0.000774668		0.002226 0 002226	3.4596E-05 3.4596E-05			0.011575497 0.011575497	4.88911E-09 4.88911E-09	1 41097E-06 1 41097E-06		
	Average intake from ingestion carcinogers ingestion Cancer Slope Factor Rak Total carcinogenic risk for exposure route	L CSF。 R R,	rng/kg-d kg-d/mg fraction fraction	1.21827E-14 4 00E-01 4.87E-15	6.96157E-15 4.00E-01 2.78E-15	4.52502E-15 4.00E-01 1.81E-15	7 65772E-15 4.00E-01 3.06E-15	3.1327E-13 4.00E-01 1.25E-13	1.48519E-10 5.50E-02 8.17E-12	4 94271E-14 7.30E-01 3.61E-14	4 59463E-14 7 30E+00 3.35E-13		2.14317E-16 7.30E-02 1.56E-17	2.17465E-10 1 10E+00 2.39E-10		8.35388E-12 1 40E-02 1 176-13	9 06082E-11 6.20E-02 5.62E-12	1 40821E-12 1.30E-01 1.83E-13		7.43006E-12 8 40E-02 6.24E-13		1 99009E-16 7.30E+00 1.45E-15	5 74329E-14	5.18637E-14 7.80E-02 4 05E-15	16
	Average intake from ingestion non-carcinogens ingestion Reference Dase Hazzard Quotient Total Hazzard Index	K RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.421325-13	8 12183E-14	5.27919E-14	8.93401E-14 2.00E-05 4.467E-09	3.65482E-12	1 73272E-09 4 00E-03 4.33179E-07	5.7665E-13	5 3604 IE-13	4.33992E-15	2.50037E-15	2.53716-09	3.67879E-10 4.00E-02 9.19697E-09		1.0571E-09 2.00E-02 5.28548E-08	1,64291E-11 7,00E-04 2,34702E-08		2.00E-02		2.32177E-15	6.70051E-13 4 00E-03 1 67513E-10	6.05076E-13 2.00E-04 3.02538E-09	81
ermal contact with creek water	POE concentration	C.	ug/l	2.992975-07	1 71027E-07	1.111685-07	1,88135-07	7 696215-06	0.003648704	1 21429E-06	1.12878E-06	9.13887E-09	5.26519E-09	0 005342537	0.000774668	0.000205232	0 002226	3.45965-05	1,35956262	0 000182537	0 011575497	4.889116-09	1.41097E-06	1.27415E-06	4.006
	event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carchagers	tevent Daeven EV ED EF SA BW AT AIn	hr mg/cm2-ever events/day y d/y cm2 kg d/y d	1.80907E-13	7.911585-13	5.51653E-13	1.481955-12	3.78617E-10	1.36534E-10	3.17844E-12	5.065575-12	4 161755-14	2.363465-14	3.17633E-11	1.55078E-10	6.52686E-11	3.778716-11	1 99165E-12	1.077526-07	2.8797E-12	2.34503E-10	3.407445-14	5 24028E-13	6.38038E-13	3.866
	Absorbed dose for carcinogens Dermal Cancer Sope Factor Risk Total carcinogens: risk for exposure route	DAD _o CSF _{der} R R,	mg/kg-d kg-d/mg fraction fraction	9 72014E-13 4.00E-01 3.89E-13	4,25089E-12 4 00E-01 1,706-12	2.96403E-12 4.00E-01 1.19E-12	7.96249E-12 4.00E-01 3 18E-12	2.03431E-09 4.00E-01 8 14E-10	7.33597E-10 5.50E-02 4.03E-11	1.70778E-11 2.35E-01 4.01E-12	2.721736-11 2.35E+00 6.40E-11		1.26989E-13 7 30E-02 9.27E-15	1.70664E-10 1.10E+00 1.88E-10		3 50688E-10 1 40E-02 4.91E-12	2,0303E-10 6,20E-02 1,26E-11	1,07011E-11 1 30E-01 1,39E-12		1.54726E-11 8.40E-02 1 30E-12		1.83082E-13 7.30E+00 1 34E-12	2.81565-12	3 42817E-12 7.80E-02 2 67E-13	16
	Absorbed dase for non-carcinogens Dermal Reference Dase Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 13402E-11	4.95937E-11	3 45803E-11	9 28958E-11 2.008-05 4.64479E-06	2.37336E-08	8.55864E-09 4 00E-03 2.13966E-06	1 99245-10	3 17535E-10	2.60879E-12	1 481545-12	1.99108E-09	9.72106E-09 4.00E-02 2.43026E-07	3 80E-03	2.36868E-09 2.00E-02 1.18434E-07	1 24846E-10 7.00E-04 1 78352E-07	6 20E-03		2 00E-03	2.13595E-12	3.28486E-11 4 00E-03 8.21216E-09	3 99954E-11 2 00E-04 1 99977E-07	80
rcinogenic risk - atl routes (detecte rcinogenic risk - atl routes (undetec AL CARCINOGENIC RISK - ALL ROL	cted organics)	Sum Rt	fraction	5 24E-13	3 01E-12	1 495-12	5 <u>21 E-12</u>	1 075-09	3 325-09	5 30E-12	8.25E-11	2.53E-12	5 56E-13	2.685-08	0 00E+00	7 065-12	1 835-11	8 94E-11	0 005+00	1 935-12	5 04E-08	7 89E-11	0 00E+00	3 69E-12	14
n-Carcinogenic risk - all routes (de n-Carcinogenic risk - all routes (un FAL NON-CARCINOGENIC HAZARD	detected organics)	Sum HI	fraction	0	0	0	5 83093E-06	0	0 000165818	0	0	0	0	0	2.52463E-07	1.382345-06	1 72056E-07	2 24747E-07	0 058737811	1 34225E-08	7 91025E-06		1 1587E-08		

TABLE 7-21 RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL C) MISSOURI ELECTRIC WORKS

Risk Total carcin Average Int Inhabitation R Hazard Que Total Hazar POE conce POE conce Water Ingel Exposure d Body weig! Averaging I Averaging I Average Int Ingestion C Risk Total carcir Average Int Ingestion C Risk Total Carcir Dermal contact with creek water POE conce POE conce Water Ingel Ingestion C Risk Total carcir Average Int Ingestion R Hazard Que Total Hazard Dermal contact with creek water POE conce event dura absorbed of	Cancer Slope Factor inogenic risk for exposure route intake from inhalation non-carcinogens Reference Dose uotent and Index pentration estion rate frequency duration	Symbol CSF _{inh} R R R R R R R R R R R R R R R R R R R	Units kg-d/mg fraction fraction mg/kg-d mg/kg-d mg/kg-d mg/kg-d d/y y kg d d mg/kg-d kg-d/mg	3 08E-01 0.00E+00 0 5.24519E-09 5.24519E-09	0 0001186	0.001433262			7 73042E-06		2.00E-02 6.63E-13 3.8663E-10 1.14E-02 3.99149E-08 0.029336582 0.029336582	1 04664E-11 2.86E-02 3.65958E-10 0.000325004	DO O
Inhalation C Risk Total carcin Average in Inhalation R Hazard Que Total Hazard Que Total Hazard Que Total Hazard Que Total Hazard Que Robert inger Exposure of Exposure of Roby weigh Averaging I Average in Ingestion C Risk Total carcin Average	Cancer Slope Factor inagenic risk for exposure route intake from inhalation non-carcinogens Reference Dase uotent and Index rentration estion rate frequency duration ght g time carcinogens g time non-carcinogens intake from ingestion carcinogens Cancer Slope Factor	CSF _{inh} R R R R R R HQ HI Cw CW IR EF ED BW ATo	kg-d/mg fraction fraction mg/kg-d mg/kg-d mg/kg-d mg/kg-d vg/t dd d/y y kg d d d mg/kg-d	0.00E+00 0 5.24519E-09 5.24519E-09	0 0001186	8.57E-04 3.09744E-06 0.001433262	5.71E-04 5.02292E-07 0.000154858	0.007212425	7 73042E-06	5 50E-11 3.05438E-10 1 40E-01 2.1817E-09 0.000841116	3.8663E-10 1.14E-02 3.39149E-08 0.029336582	2.69E-14 1 04664E-11 2.86E-02 3.66958E-10 0.000325004	
Risk Total carcin Average Int Inholation R Hazard Que Total Hazard Indentral ingestion of creek water POE conce Water inges Exposure fit Exposure of	intogenic risk for exposure route Intake from inhalation non-carcinogens Reference Dase Joseph Lander Joseph	RR R L DE DE DE DE DE DE DE DE DE DE DE DE DE	fraction mg/kg-d mg/kg-d mg/kg-d mg/kg-d mg/kg-d vg/l mg/m3 Vd d/y y kg d d mg/kg-d	5.24519E-09 5.24519E-09	0 0001186	8.57E-04 3.09744E-06 0.001433262	5.71E-04 5.02292E-07 0.000154858	0.007212425	7 73042E-06	3.05438E-10 1 40E-01 2.1817E-09 0.000841116	3.8663E-10 1.14E-02 3.39149E-08 0.029336582	1 04664E-11 2.86E-02 3.65958E-10 0.000325004	
Average in Inhalation R Hazard Que Total Hazard Que Total Hazard Gue Hazard Ingestion of creek water POE conce Water Inges Exposure in Exposure of Body weight Averaging I Averaging I Averaging I Average in Ingestion C Risk Total carcin Average in Ingestion R Hazard Que Total Hazard Gue Total Contact with creek water POE conce event dura absorbed a	ntake from inhalation non-carcinogens Reference Dose United to the control of the	IORFO	mg/kg-d mg/kg-d mg/kg-d mg/kg-d ug/i mg/m3 Vd d/y y kg d d mg/kg-d	5.26519E-09 5.26519E-09	0 0001186	8.57E-04 3.09744E-06 0.001433262	5.71E-04 5.02292E-07 0.000154858	0.007212425	7 73042E-06	1 40E-01 2.1817E-09 0.000841116	1.145-02 3 391495-08 0 029336582	1 04664E-11 2.86E-02 3.65958E-10 0.000325004	
Inhalation R Hazard Quu Total Hazard FOE conce POE conce Water inger Exposure in Exposure of Body weig Averaging I Average in Ingestion C Risk Total carcir Average in Ingestion R Hazard Quu Total Hazard POE conce	Reference Dose uptient and index pentration pentration pentration pentration pentration pertration	RFD _{Fish} HQ HI C* " IR EF ED BW AT AT CSF CSF	mg/kg-d mg/kg-d mg/kg-d ug/t mg/m3 Vd d/y y kg d d mg/kg-d	5.26519E-09 5.26519E-09	0 0001186	8.57E-04 3.09744E-06 0.001433262	5.71E-04 5.02292E-07 0.000154858	0.007212425	7 73042E-06	1 40E-01 2.1817E-09 0.000841116	1.145-02 3 391495-08 0 029336582	2.86E-02 3.69758E-10 0.000325004	A.74
Inhalation R Hazard Quu Total Hazard FOE conce POE conce Water inger Exposure in Exposure of Body weig Averaging I Average in Ingestion C Risk Total carcir Average in Ingestion R Hazard Quu Total Hazard POE conce	Reference Dose uptient and index pentration pentration pentration pentration pentration pertration	RFD _{Fish} HQ HI C* " IR EF ED BW AT AT CSF CSF	mg/kg-d mg/kg-d mg/kg-d ug/t mg/m3 Vd d/y y kg d d mg/kg-d	5.26519E-09 5.26519E-09	0 0001186	8.57E-04 3.09744E-06 0.001433262	5.71E-04 5.02292E-07 0.000154858	0.007212425	7 73042E-06	1 40E-01 2.1817E-09 0.000841116	1.145-02 3 391495-08 0 029336582	2.86E-02 3.69758E-10 0.000325004	
Hazard Que Total Hazard Que Total Hazard Que total Hazard Ingestion of creek water POE conce Water Inges Exposure in Exposure of Body weight Averaging I Averaging I Averaging I Averaging I Average In Ingestion C Risk Total carcir Average Insigns on the Ingestion R Hazard Que Total Hazard Gue Total Control Con	uotent ard Index centration centration cestion rate frequency duration ght g time corcinogens g time non-carcinogens intake from ingestion carcinogens Cancer Slope Factor	HQ HI C, R EF ED BW AT, Aline CSF, CSF, C	mg/kg-d mg/kg-d ug/t mg/m3 l/d d/y y kg d d mg/kg-d	5.26519E-09		3.09744E-06 0.001433262	5.02292E-07 0.000154858			2.18175-09 0.000841116	3 39149E-08 0 029336582	3,65758E-10 0,000325004	
Total Hazara cidental ingestion of creek water POE conce Water inges Exposure fit Exposure of Exposure	and Index centration centration estion rate frequency duration ght g time carcinogens g time non-carcinogens intake from ingestion carcinogens Cancer Slope Factor	HI C., C., IR EF ED BW ATo, ATo, CSF CSF	mg/kg-d ug/i mg/m3 l/d d/y y kg d d mg/kg-d	5.26519E-09		0.001433262	0.000154858			0.000841116	0 029336582	0.000325004	
POE conce POE conce Water inger Exposure in Exposure in Body weigh Averaging in Average in ingestion C Risk Total carcin Average in ingestion R Hazard Qu Total Hazard POE conce POE conce POE conce Exposure in Ingestion C Risk Total carcin Average in Ingestion R Hazard Gu Total Hazard POE conce event dura absorbed of	centration sentration estion rate frequency duration ght g time carcinogens g time non-carcinogens intake from ingestion carcinogens Cancer Slope Factor	C. C. IR EF ED BW AT. ATr. CSF.	ug/i mg/m3 Vd d/y y kg d d mg/kg-d	5.26519E-09								0.000325004	
POE conce Water inges Exposure on Body weigh Average in Ingestion C Risk Total carcir Average in Ingeston R Hazard Quu Total Hazar POE conce event dura absorbed a	centration estion rate frequency duration ght g time carcinogens g time non-carcinogens intake from ingestion carcinogens Cancer Slope Factor	C IR EF ED BW AT AT CSF CSF	mg/m3 Vd d/y y kg d d mg/kg-d	5.26519E-09									
Water inget Exposure in Exposure in Exposure in Body weigh Averaging i Averaging i Average ini ingestion C Risk Total carcin Average ini ingestion R Hazard Qu Total Hazard POE conce event dura absorbed a	estion rate frequency duration ght ght is true carcinogens gitime non-carcinogens intake from ingestion carcinogens Cancer Slope Factor	IR EF ED BW AT ATn CSF	Vd d/y y kg d d mg/kg-d		0.0001186	0 001433262	0.000154858	0.007212425	7.73042E-06	0.000841116	0.029336582	0.000325004	
Exposure fin Exposure fin Exposure fin Body weigh Averaging i Averaging i Average in Ingestion C Risk Total careir Average in Ingestion R Hazard Qu Total Hazard POE conce event dura absorbed o	frequency duration ght g time carcinogens g time non-carcinogens intake from ingestion carcinogens Cancer Slope Factor	EF ED BW AT ₀ ATn ₀ CSF ₀	d/y y kg d d mg/kg-d	2.14317E-16									
Exposure di Body weight Averaging i Average intingestion C Risk Total carcir Average intingestion Risk Total carcir Average intingestion Risk Total carcir Average intingestion Risk Risk Total carcir Average intingestion Risk Risk Total Carcir Average intingestion Risk Risk Risk Risk Risk Risk Risk Risk	duration ght ght ght ght ght ght ght ght ght ght	ED BW AT _o ATn _o CSF _o	y kg d d mg/kg-d	2.14317E-16									
Body weight Averaging in Average in Ingestion C Risk Total cancin Average in Ingestion Risk Total cancin Average in Ingestion Risk Total cancin Average in Ingestion Risk Hazzard Que Total Hazzard Countries and Countries Risk Water PoE concession and Countries Risk Water Risk	ght g time carcinogens g time non-carcinogens intake from Ingestion carcinogens Cancer Slope Factor	BW AT _o ATn _o L _o CSF _o	kg d d mg/kg-d	2.14317E-16									Į.
Averaging Averaging Averaging Averaging Average In Ingestion C Risk Total care: Average In Ingestion R Hazzrd Que Total Hazzrd POE concervation and contact with creek water POE concervations absorbed a classified in the Poet Concervation of the	time carcinogens glime non-carcinogens intake from ingestion carcinogens Cancer Slope Factor	AT _o ATn _o I _o CSF _o	d d mg/kg-d	2.14317E-16									l l
Averaging I Average in Ingestion C Risk Total carcir Average in Ingestion R Hazard Qut Total Hazar Dermal contact with creek water event dura absorbed o	g time non-carcinogens Intake from ingestion carcinogens Cancer Sope Factor	ATn _o	d mg/kg-d	2.14317E-16									
Ingestion C Risk Total carcin Average in Ingestion Risk Hazard Ru Hazard Ru Hazard Ru Hazard Ru Fotal Hazar POE conce event dura absorbed a	Cancer Slope Factor	CSF _e		2.14317E-16									
Ingestion C Risk Total carcin Average in Ingestion R Hazard Qu Total Hazar POE conce event dura absorbed a	Cancer Slope Factor	CSF _e		# 170 I/ L- IU	4 R2755E-12	6.83402F-11	£ 303495,19	20357RF-10	3.14663E-13	3 42372E-11	1 194135-09	1 322915-11	
Risk Total carcir Average in: Ingestion R Hazard Qtu Total Hazar ermal contact with creek water event dura absorbed a			~ ~ ~ ~ ~ ~	7,30E-01	4,027,000-12	D GO-GEL-11	0.000721-12	7 00E+00	1.206-01	5.40E-01	2,00E-02	7 206-01	- 1
Total careir Average in Ingestion R Hazzrd Qu Total Hazar POE conce event dura absorbed a	cinogenic risk for exposure route		fraction	1.56E-16				2.06E-09	3 785-14	1.85E-11	2.39E-11	9.52E-12	- 1
Ingestion R Hazard Que Total Hazard POE conce event dura absorbed a		R,	fraction	12001 10				EXOC O	070214	122		/	18,850
Ingestion R Hazard Que Total Hazard POE conce event dura absorbed a	intake from Ingestion non-carcinogens	L	mg/kg-d	2.50037E-15	5.63215E-11	6.80636E-10	7.354E-11	3.425086-09	3.67107E-12	3.99434E-10	1.39315E-08	1.5434E-10	
Hazard Que Total Hazar Dermal contact with creek water POE conce event dura absorbed a	Reference Dose	RfD _o	mg/kg-d		4 00E-03	2.00E-02	5 00E-04	4	3.00E-02	1 00E-02	3.00E-04	3.00E-03	
Total Hazar Dermal contact with creek water POE conce event dura absorbed a		HQ	mg/kg-d			3.40318E-08	1.47085-07				4.64384E-05		
event dura absorbed o		HI	mg/kg-d										Y. SOR Zarrak
absorbed o	centration	C _w	ug/l	5.26519E-09	0.0001186	0.001433262	0 000154858	0.007212425	7.730425-06	0.000841116	0.029336582	0.000325004	
	ration	tevent	hr										ı
	I dose per event	Daevent	mg/cm2-ever	2.498696-14	٥	2.00333E-10	2.52675E-12	5.27912E-11	1.93543E-11	1.04633E-10	1.06659E-09	4,46083E-12	1
Event frequ		EV	events/day										ŀ
Exposure d		ED	y										1
Exposure fr		EF .	d/y										i
Skin surface		SA BW	cm2 kg										
Body weigh Averaging		AT.	d/γ										
	time non-carcinogens	ATno	ď										
E-3	l don for a many	DAD	mater el	1,34255E-13		1 07/20E 00	1 277/25 11	2.83647E-10	1.03991E-10	5.62195E-10	5 73079E-09	2 3968E-11	
	i dose for carcinogens ancer Slope Factor	CSF _{der}	mg/kg-d kg-d/mg	2.30E-01	U	1 07639E-09	1.35762E-11	2,8364/E*10 1 80E+00	1.03991E-10 1.20E-01	5.40E-01	3 00E-03	2 3768E-11 7 20E-01	
Plak	witten stupe rocius	R R	rg-a/mg fraction	2.30E-01 3.09E-14				5.11E-10	1.25E-01	3.04E-10	1.725-11	1.735-11	l
nen .	cinogenic risk for exposure route	Ř,	fraction	G 974-19				0.11 <u>L-10</u>	1444-11	WO-10	1.7 2.5-1 1	GL-11	8.185-07
المامية المامية المامية المامية المامية المامية المامية المامية المامية المامية المامية المامية المامية المامي	i dase for non-carcinogens	DAD _{no}	mg/kg-d	1 5663E-12	0	1,25579E-08	1.58389E-10	3,309215-09	1.21322E-09	6 558946-09	6 68592E-08	2.79627E-1D	
	eference Dose	RfD _{der}	mg/kg-d	1 30031212	4 00E-03	2.00E-02	5 00E-04	J.JU721C-07	3 005-02	1 005-02	4.50E-05	3.00E-03	1
Hazard Qu		HQ	mg/kg-d mg/kg-d		40000		3,16778E-07		4 04408E-08			9 32089E-08	
Total Hazar		Hi	mg/kg-d			641074E-U/	3.10//02-0/		/ WT-100L-00	# mm/7L7/		, SEE-071-00	234640
cinogenic risk - all routes (detected organics)	1												2 78E-07
cmogenic risk - all routes (undetected organic													3 49E-09
AL CARCINOGENIC RISK - ALL ROUTES		Sum Rt	fraction	2.02E-12	0 00E+00	0 00E+00	0 00E+00	2.59E-09	1 59E-11	1 52E-07	2 77E-08	1 58E-09	2.821-07
-Carcinogenic risk - all routes (detected organ				· ·									6.47E-02
n-Carcinogenic risk - all routes (undetected org AL NON-CARCINOGENIC HAZARD INDEX - ALL			fraction				8 84096E-06		5 14364E-08				1 97E-04

TABLE 7-22
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

_																Chemicals	of Potential Co	oncern				-	-	
ource Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbol	_	Non ontominant- Specific Parameters	1.1 2.2-Tetrachloroethane	1,1,2-Trichioroethane	1,1-Dichloroethane	Total 1,2 Dichloroelthene	1,2.4 Trichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropore	1,3-Dichlarobengene	1,4-Dichlorobenzene	2.4.6-Trichiorophenol	2.4-Dinitrototuene	2.6-Dirittrotolvene	2-Chlorophenol	3.3-Dichknoberzidine	4.6-Dhilto-2-Meitry Pheno	Aroctor-1016	
								7.005.07	2.005.05	0.075.00	7 105 04			40/50/			0.007:00	0.005.00						
Groundwater	Ař	indoor air	Vapour Intrusion - inhatation	POE concentration POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time concludes Averaging time non-carcinogens	Co-h Co-h IR ET ED BW ATo-	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25.550 2.190	7.59E-06 7.59E-09	9.306-05 9.306-08	2.27E-06 2.27E-06	7.42E-03 7.42E-06	4.09E-03 4 09E-06	1.92E-04 1.92E-07	1.06E-04 1.06E-07	8.90E-03 8.90E-06	6.16E-06	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	3.06E-04 3.06E-07	0.00E+00 0.00E+00		6.76E-08 6.76E-11	0.00E+
				Average Intake from Inhalation carcinogens Inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _{inth} R R	mg/kg-d kg-d/mg traction traction		2.03E-01 8.51E-11	5 13666E-09 5.70E-02 2.93E-10				9.10E-02 9.65E-10	5.85468E-09		3 40235E-07 2.20E-02 7 49E-09	0 1 095-02 0.00E+00	0		1.690136-08	0		3.73374E-12 4 00E-01 1.49E-12	4.00E+ 0.00E+
				Average Intake from inhalation non-carcinogens Inhalation Reference Dose Hazard Quotent Total Hazard Index	RID	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4.89087E-09	5.992776-08	1.46275E-06	4.78133E-06	2.63553E-06 1 14E-03 0.002311867	1.40E-03	6.83047E-08 3.14E-03 5.99164E-05	5 73501E-06	3 9694E-06 2.30E-01 1.72583E-05			0	1 97181E-07		0	4 35603E-11	
	Groundwater	Tap Water	Ingestion of tap water	POE concentration POE concentration Water Ingestion rate Exposure trequency Exposure duration Body weight Averaging time carcinogens Averaging firme non-carcinogens	C IR EF ED BW AT ₀ ATn ₀	ug/i mg/m3 I/d d/y y kg d d	350 6 15 25,550 2,190	2.22545E-07		0.000029357 0 000029357	0.00000122 0.00000122	0 00000196 0 00000196	2.581E-08 2.581E-08	1.3795E-08 1.3795E-08	0.0000164 0.0000164	0 0000181 0.0000181	4.6403E-07 4.6403E-07		0 000000639 0 000000639				2.225E-08 2.225E-08	1 2905E-0 1 2905E-0
				Average intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	CSF。 R R	mg/kg-d kg-d/mg fraction fraction		1.21942E-12 2.00E-01 2.44E-13	8.04658E-14 5.70E-02 4.59E-15	1.60865-10	6.68493E-12	1.073976-11	1.41425E-13 9 10E-02 1.29E-14	7 5589E-14 6.80E-02 5.14E-15	8.9863E-11	9.91781E-11 2.406-02 2.38E-12	2.542636-12 1 106-02 2.806-14	5.7789E-13 6.80E-01 3.93E-13	3.50137E-12 6.70E+00 2.35E-11	4.67014E-11	3.91773E-12 4.50E-01 1.76E-12	2.51668E-12	1.21918E-13 4.00E-01 4.88E-14	4 00E-
				Average intake from Ingestion non-carchagens Ingestion Reference Dase Hazard Quatient Total Hazard Index	RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	9.38767E-13 4 00E-03 2.34692E-10	1 005-01	7.79909E-11 1.00E-02 7.79909E-09	1.00E-02	2,00E-02	8 818725-13 3 106-03 8.017026-10	3 00 5 -02	1.15708E-09 3.00E-02 3.85693E-08	2.9664E-11 1 00E-04 2.9664E-07	2.006-03		5.44849E-10 5 00E-03 1 0897E-07	4.57068E-11	2.93613E-11 1.00E-04 2.93613E-07	1 42237E-12 7.00E-05 2.03194E-08	8.24977E-
			Dermal contact with tap water	POE concentration event duration absorbed dose per event Event frequency Exposure duration	C _w tevent Daever EV ED	events/day y	1 1 6 350	2.22545E-07 4.11711E-15			0 00000122 1 63529E-14	0.00000196 3.7841E-13	2.581E-06 1.9079E-16	1.3795E-08 2.00333E-16	0.0000164 2.212135-12	0 0000181 1 770455-12			0.000000639			4.59295E-07 4.61624E-15	2.225E-08 0	1.290564 5 51565E-1
				Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	SA BW AT ATn _s	d/y cm2 kg d/y d	6.600 15 25.550 2,190																	
				Absorbed dose for carcinagens Dermal Cancer Slope Factor Risk Total carcinagens: risk for exposure route	DAD _o CSF _{ober} R R _t	mg/kg-d kg-d/mg traction fraction		2.00E-01 2.98E-14	5 70E-02 4.16E-16			1.36855-11	9 10E-02 6-28E-16	6 80E-02 4 93E-16		2.406-02 1 546-12	1 10E-02 2.06E-14	8.00E-01 2.77£-14	6.70E+00 0.00E+00		4 50E-01 6.89E-13		4.00E-01 0.00E+00	
				Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{dur} HQI HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6 006-02	8.51374E-14 4 00E-03 2.12844E-11	1 00E-01	1.00E-02	1.59658E-10 1.00E-02 1.59658E-08	2.00E-02	1 10E-03	3.00E-02	3 00E-02	1.00E-04	2.005-03	1 00E-03	5 94126E-11 5 00E-03 1 18825E-06	1.79638E-11	1.94768E-12 1.00E-04 1.94768E-08	7.00E-05 0	2.32715E-1
	Air	Indoor Air	Vapors from tap water	Concentration in top water Concentration in top water Volatilization factor	C C ∀F	ug/l mg/m3 dimensionless	0 0005 y	2.22545E-07 2.22545E-07		0.000029357 0.000029357	0.00000122		2.581E-08 2.581E-08	1 3795E-08 1 3795E-08	0.0000164 0.0000164	0 0000181 0 0000161			0.000000639			4 59295E-07 4 59295E-07	2.225E-08 2.225E-08	
(only calculated	for COPC with Henry's	:Law > 1e-5 atm m3/r	nol those with a "Y"]	POE concentration trindiction rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens	C _{o-top} IR ET EF ED 8W AT _e	mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25.550	1 112736-10	7.34256-12	1 46785E-08	6 1E-10	9,8E-10 ²	1 29058-11	6.8975E-12	8.25-09	9 0SE-09	0	0	o'	4.2615E-09	0	0	1.11255-11	1
				Averaging time non-carcinogens Average intake from inhalation carcinogens	ATn _e	d mg/kg-d	2,190	6 1459E-12	4 05547E-13	8.10734F-10	3.36921E-11	5.41282E-11	7 1278E-13	3.80969E-13	4 5291E-10	4 99858E-10	0	0	0	2.35375E-10	0	0	6.14466E-13	(

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TABLE 7-22
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

																								MUSSOURI ELE	CIRIC WOR
														* - : · · · · · · · · · · · · · · · · · ·	··	d	emicals of Po	ential Conce	m						
Exposure Route	Parameter	Symbol	Units	Aroclar-1232	Aroclor-1242	Aractor-1248	Araclar-1254	Aroctor-1260 (Filered)	Berzene	Berzo(a) anthrocene	Berzo(a)pyrene	Benzo(b)fluorcarithene	Benzo(k) fluoronithene	bs(2-Chicroethyl) Ether	bs(2-CHorokopropy) Elhe	Bk (2-ethythexyl phthodole)	Bromodichiaromethane	Carbon Tetrachloide	Charoberzene	Chlorodipromomethane	Chloroform	Diberzo(a h)Anffracene	Diberzofuran	Hexachare-1 3-Butadiene	· · ·
				0.005:00	2 405 00	0.005:00	£ 005 00	0.005.04	0.175.00	0.005.00	0.00€+00		0.005:00	4.115.04			1 805 80	2015.00							
Vapour Intrusion - Inhalation	POE concentration POE concentration Inhalation rate Exposure frequency Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Confi Confi IR ET ED BW AII. AIN.	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00E+00 0.00E+00	3.48E-09 3.48E-11	0.00E+00 0.00E+00	5.00E-08 5.00E-11	2 08E-06 2.08E-09	2.17E-03 2.17E-06	0.00E+00 0.00E+00	0.005+00	5.21E-08 5.21E-11	0.00E+00 0.00E+00	4 115-04 4.115-07	0.00E+00 0.00E+00	0.00E+00 0.00E+00	1.205-03 1.205-06	3.04E-05 3.04E-08		9.87E-08 9.87E-08	1.135-02 1.135-05	0.00E+00 0.00E+00			
	Average intake from inhalation carcinogens Inhalation Cancer Slape Factor Risk Total carcinogenic risk for exposure route	io CSF _{INI} R R ₁	mg/kg-d kg-d/rng fraction fraction	0 4 00E-01 0.00E+00	1 92215-12 4.005-01 7.695-13	0 4.005-01 0.00E+00	2.76164E-12 4.00E-01 1.10E-12	1 14884E-10 4.00E-01 4.60E-11	1 19855E-07 2.73E-02 3.27E-09	3.086-01 0.00E+00	0 3.08E+00 0 00E+00	2.87763E-12 3.08E-01 8.86E-13	0 3.086-01 0.006+00		0	0	6.62795E-08	1 67908E-09 5.20E-02 8.73E-11		5.45148E-09	6 24132E-07 8.10E-02 5.06E-08	0 3.08E-01 0.00E+00	1 79507E-08	4 13142E-11 7 70E-02 3 18E-12	1 6164
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quohent Total Hazard Index	l, RfD _m n HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.24245E-11	0	3.22192E-11	1.34032E-09	1.39831E-06 8.57E-03 0.000163164	0	0	3.35724E-11	0	2.64842E-07	0	0	7 73265-07	1 958936-08	0.000979463 1 70E-02 0.057615471	6.36007E-08	7.28153E-06	0	2.09425E-07	4,81999E-10	7.73266
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C R F ED BW AT a Alina	ug/i mg/m3 l/d d/y y kg d	1.5575E-08 1 5575E-08	8.95-09 8 95-09	5.785E-09 5.785E-09	9.79E-09 9 79E-09	4.005E-07 4.005E-07	0.00000146 0.00000146	6.3195-08 6.3195-08	5.874E-08 5.874E-08			0.00000534 0.00000534	7.743E-08 7.743E-08	0.00001068 0.00001068	2.225E-07 2.225E-07	1.98875-07 1 98675-07			0.000001157 0.000001157	5.785E-08 5 785E-08			
	Average intake from ingestion caranogens ingestion Cancer Slope Factor Risk Total caranogenia risk for exposure route	l, CSF, R R,	mg/kg-d kg-d/mg fraction fraction	8 53425E-14 4 00E-01 3.41E-14	4.87671E-14 4.00E-01 1.95E-14	3.16986E-14 4 00E-01 1.27E-14	5.36438E-14 4 00E-01 2 15E-14	2.19452E-12 4.00E-01 8.78E-13	8E-12 5.50E-02 4 40E-13	3.46247E-13 7.30E-01 2.53E-13	3.21863E-13 7.30E+00 2.35E-12	7.306-01	7 30E-02	1 10E+00	4.242745-13	5.85205E-11 1 40E-02 8 19E-13	1.21918E-12 6.20E-02 7.56E-14	1 08975-12 1,305-01 1,425-13		9.99726E-14 8.40E-02 8.40E-15	6.33973E-12	3.16986E-13 7.30E+00 2.31E-12	4.023295-13	3 63315E-13 7.80E-02 2 83E-14	1.60E4
	Average intake from ingestion non-carcinogens ingestion Reference Dase Hazard Quofient Total Hazard Index	RfD _o HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	9 95662E-13	5 68955-13	3.69817E-13	6.25845E-13 2 00E-05 3.12922E-08	2.56027E-11	9.33333E-11 4.00E-03 2.33333E-08	4 03954E-12	3.75507E-12	6.912745-12	3.98265E-12	3.4137E-11	4.94986E-12 4 00E-02 1.23747E-10	6.8274E-10 2.00E-02 3 4137E-06	1.42237E-11 2.00E-02 7.11187E-10	1.271326-11 7 006-04 1.81616E-08	2.005-02	2.00E-02	1.00E-02	3.69817E-12	4.69384E-12 4 005-03 1.17346E-09		8.00E
Dermal contact with top water	POE concentration	C.,	ug/l	1.5575E-08	8.95-09	5.78SE-09	9 79E-09	4.005E-07	0.00000146	6.319E-08	5.874E-08	1.08135E-07	6.23E-08	0.000000534	7.743E-08	0 00001048	2.225E-07	1.9887E-07	0.0000248	1.8245E-08	0.000001157	5.785E-08	7 3425E-08	6.6305E-08	6.586
	event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	tevent Daever EV ED EF SA BW AT ATn _o	hr mg/cm2-ever events/day y d/y cm2 kg d/y d	6.45682E-15	2.911216-14	2.029915-14	5.4531E-14	1.393196-11	3.39713E-14	1.16957E-13	1.86397E-13	3.48205E-13	1 .97746 E-13	2.15545E-15	1.09605E-14	2.40168E-12	2.67075E-15	7.90178E-15	1.305746-12	2.03529E-16	1 539816-14	2.85093E-13	1.92826E-14	2.347785-14	4 49388E
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Rbk Total carcinogenic risk for exposure route	DAD _o CSF _{der} R R.	mg/kg-d kg-d/mg fraction fraction	2.4074E-13 4.00E-01 9.63E-14	1.05282E-12 4.00E-01 4.21E-13	7.34104E-13 4 00E-01 2.94E-13	1.97208E-12 4.00E-01 7 89E-13	5.03839E-10 4 00E-01 2.02E-10	1.22855E-12 5.50E-02 6 76E-14	4.22967E-12 2.35E-01 9.94E-13	6.74093E-12 2.35E+00 1.58E-11	1.25926E-11 2.30E-02 2.90E-13			3.963795-13	8.68552E-11 1.40E-02 1.22E-12		2.85763E-13 1 30E-01 3.71E-14		7.3605E-15 8 40E-02 6.18E-16	5 56864E-13	1 03102E-11 7.30E+00 7.53E-11	6.97342E-13	8 4906E-13 7.80E-02 6.62E-14	1 60E
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.80863E-12	1.22829E-11	8.56455E-12	2.30076E-11 2.00E-05 1.15038E-06	5.87812E-09	1 43331E-11 4.00E-03 3.58327E-09	4 93461E-11	7.86442E-11	1.46914E-10	8.343265-11	9,094225-13	4 00E-02	3 80E-03		7.00E-04	6.20E-03	2.00E-02	2 006-03	1. 20286 E-10	8 13565E-12 4 00E-03 2.03391E-09		8 00E
Vapors from tap water	Concentration in top water Concentration in top water Volatilization factor	C., C., VF	ug/l mg/m3 climensioniess	1.5575E-08 1 5575E-08	8.9E-09 8.9E-09		9 79E-09 9 79E-09	4.005E-07 4.005E-07		6.319E-08 6.319E-08	5.874E-08 5.874E-08			0.000000534 0.000000534	7.743E-08 7.743E-08	0.00001068 0.00001068	2.225E-07 2.225E-07	1.9887E-07 1 9887E-07			0.000001157 0.000001157	5.785E-08 5 785E-08	7.3425E-08 7.3425E-08		
l, those with a "\")	POE concentration inhalation rate Exposure time Exposure trequency Exposure duration Body weight Averaging time carcinogens	C _{o-tesp} IR ET ED BW AT _o	mg/m3 m3/hr h/d d/y y kg d	o '	4.45E-12	0	4.895E-12	2.0025E-10	7.35-10	0	0	5.40675E-11	0	2.67E-10	0	0	1,1125E-10	9.9435E-11	1 245-08	9.122 5 E-12	5.7855-10	0	3.671255-11	3.31525E-11	3.293E
	Averaging time non-carcinogens Average intake from inhalation carcinogens	Aīn₀ l₀	d mg/kg-d	0	2.45786E-13	0	2.70365E-13	1 10604E-11	4.0325-11	o	o	2.9863E-12	0	1,47472E-11	0	o	6.14466E-12	5 49208E-12	6.84888E-10	5.03862E-13	3.19522E-11	0	2.027746-12	1,831116-12	1.818826

TABLE 7-22
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

··									Ch	emicals of Pot	ential Concern			
Exposure Route	Parameter	Symbol	Units	Indeno[1,2,3-cd]Pyrene	2-methy/mapthatene	Nophificiene	Vitroberzene	Nitrosod-n-propylamine	Pentachlorophenol	Tetrachloroethene	Trichloroeffrene	Vinyl Chloride	Total	<u>-</u>
Vapour intrusion - Inhalation	POE concentration POE concentration	Con Con	ug/m3 mg/m3	0.00E+00 0.00E+00	2.19E-05 2.19E-08	2.75E-04 2.75E-07	6.87E-06 6.87E-09	0.00E+00 0.00E+00	0.00E+00	1.31E-03 1.31E-06	2.50E-02 2.50E-05	9.36E-04 9.36E-07		
	Inhalation rate	IR .	m3/hr										- 1	
	Exposure time	ET	h/d										- 1	
	Exposure frequency	EF	d∕y											
	Exposure duration	ED	y h-										l l	
	Body weight	BW AT _e	kg d											
	Averaging time caramagens Averaging time non-carainogens	ATn _o	d											
													ŀ	
	Average Intake from inhalation carcinogens Inhalation Cancer Slope Factor	լ CՏ⊁ու	mg/kg-d kg-d/mg	0 3 085-01	1 2096E-09	1.5189E-08	3.7945E-10	0	0	7.23551E-08	1.38082E-06	5 1698E-08		
		R R	fraction	0.006+00						2.10E+00	6 005-03	3 005-02		
	Risk Total caranogenia risk for exposure route	R,	fraction							1.525-07	8.285-09	1 558-09	2346	9
	Average intake from inhalation non-carcinogens		malka d	_	1 41100 00	1 777055 07	1 121000 00		_	9 441 405 80	1./100/5.05	4.001405.05	70.00	
	Average intake from Inhalation non-carcinogens Inhalation Reference Dose	ե PfD	mg/kg-d ma/ka-d	0	1.41125-08		4 42692E-09	0	0	8 441425-07	1.61096E-05			
	Inhalation Reference Dose Hazard Quotient	RfD _{Inh} HQ	mg/kg-d			8 57E-04	5 71E-04 7 75292E-06			1.405-01	1 14E-02 0.001413122	2.865-02	1	
	Total Hazard Index	HI)	mg/kg-d mg/kg-d			U UUUZU8//4	/ / 0.Z/ZE-U6			0 UZY5YE-U6	d.001413122	∡.10887E-05	-1.000	9
					101055	0.00000.00	0.00: #-	7.000-00	4 00000 7 "					
ingestion of top water	POE concentration POE concentration	C	ug/l mg/m3	6.23E-08 6.23E-08	6.818E-07 6.818E-07	8.2389E-06 8.2389E-06	8 9018E-07 8 9018E-07	7,209E-07 7,209E-07	4 0228E-07 4.0228E-07	0.00000948	0.0000012	3 2485E-08 3 2485E-08		
	Water Ingestion rate	IR .	1/d	4200	0.0102-07	0.2007 2-00	070100-07	1.2072-07	40220CQ/	0.00000740	0.000012	3 24032-00		
	Exposure frequency	EF	ά/γ											
	Exposure duration	ED	y											
	Body weight	BW	kg											
	Averaging time carcinogens	AT _e	d											
	Averaging time non-carcinogens	ATn _e	d										l	
	Average intake from ingestion carcinogens	ا	mg/kg-d	3 4137E-13	3.73589E-12	4.51447E-11	4.8777E-12	3.95014E-12	2.20427E-12	5.19452E-12	6.57534E-12	1.78E-13	l l	
	Ingestion Concer Slope Factor	CSF.	kg-d/mg	7.30E-01				7 00E+00	1.205-01	5.40E-01	6.00E-03	7.20E-01	j	
	Risk	R	traction	2.49E-13				2 <i>77</i> E-11	2.65E-13	2.81E-12	3.95E-14	1.28E-13		
	Total carcinogenic risk for exposure route	R,	fraction									[7,125-11	
	Average intake from ingestion non-carcinogens	ل _ه	mg/kg-d	3 98265E-12	4.35854E-11	5.266B8E-10	5.69065E-11	4.60849E-11	2.57165E-11	6.06027E-11	7 67123E-11	2.07667E-12		
	Ingestion Reference Dose	RfD.	mg/kg-d		4.00E-03	2.00E-02	5.00E-04		3.00E-02	1.00E-02	3.00E-04	3.00E-03	- 1	
	Hozard Quotient	HQ	mg/kg-d		1.08963E-08	2.63344E-08	1.13813E-07		8.57218E-10	6.06027E-09	2.55708E-07	6.92222E-10	- 1	
	Total Hazard Index	HI	mg/kg-d										1.5 CH	
ermal contact with tap water	POE concentration	C.,	ug/l	6.23E-08	6.818E-07	8 2389E-06	8.9018E-07	7.209E-07	4.02285-07	0.000000948	0 0000012	3.24855-08		
	event duration	tevent	hr		_									
	absorbed dose per event	Daevent EV		2 0906E-13	0	7.92888E-13	9.58085E-15	3.51816-15	7 12178E-13	8.33888E-14	2 94245E-14	2.67062E-16		
	Event frequency Exposure duration	ED	events/day											
	Exposure frequency	EF	d/y										ŀ	
	Skin surface area	SA	cm2										1	
	Body weight	BW	kg										- 1	
	Averaging time	ATO.	ďλ										ì	
	Averaging time non-carcinogens	ATn _o	d											
	Absorbed dose for carcinogens	DAD.	mg/kg-d	7,56054E-12	0	2.86743E-11	3.46485E-13	1.2723E-13	2.57555E-11	3.0157E-12	1.06412E-12	9.65812E-15		
	Dermal Concer Slope Factor	CSF _{car}	kg-d/mg	2.30E-01				1 80E+00	1.205-01	5.40E-01	9 00E-04	7 206-01	I	
	Risk Tatel continuously delt for experi ne routle	R R,	fraction fraction	1.74E-12				2.29E-13	3.09E-12	1.63E-12	9.58E-16	6.95E-15	o just se	
	Total carcinogenic risk for exposure route	~	fraction									1	3.096-10	
	Absorbed dose for non-carchagens	DAD	mg/kg-d	8.82063E-11	_	3.34534E-10		1 48435E-12					j	
	Dermal Reference Dose	RfD _{de}	mg/kg-d		4 006-03	2.005-02	5.00E-04		3.00E-02	1.005-02	4 505-05	3.00E-03	1	
	Hazard Quotient Total Hazard Index	HQ HI	mg/kg-d mg/kg-d		0	1.67267E-08	8 08466E-09		1.00166-08	3.51832E-09	2.75883E-07	3 75594E-11	2.235-06	
					, ***-		0.0000	4						
Vapors from tap water	Concentration in top water	c	ug/l	6.236-08	6 8185-07	8.2389E-06	8.9018E-07	7,209E-07		0.000000948	0.0000012		l	
	Concentration in top water	C*	mg/m3	6.23E-06		8.2389E-06	8.9018E-07	7.209E-07	4.0228E-07		0.0000012		I	
see with a 5/1	Volatilization factor POE concentration	VF C _{o-top}	dimensionless mg/m3	0		y 4.11945E-09	y 4 450 9E -10	Ó	0		y 45.10	y 1 62425E-11	ļ	
nase with a "y")	Inhalation rate	IR	mg/ms m3/hr	U	-3 -1 07 €-10	4,11743047	+ +3U7E-10	U	υ	-J-E-1V	9E-10	1 04-420C-11	į.	
	Exposure fime	ET .	h/d										1	
	Exposure frequency	EF	d/y										- 1	
	Exposure duration	ED	y ,										- 1	
	Body weight	BW	kg										1	
	Averaging time carcinogens	AT _c	ď										1	
	Averaging firms non-carcinogens	ATn _a	d											
	Average Intake from inhalation carcinogens	L,	malked	•	1 88290s.**	2.27529E-10	2 458945.11	0	^	2 61804E-11	3 31397E-11	R 97126_12	l	
	Average arrows from syndronion coronogens	4	mg/kg-d	U	1.002891-11	2.2/52/E-10	∠43036E-11	U	Đ	£010U4C+ 1	33137/5-11	07/122-13	i	

TABLE 7-22
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

																Chemica	of Potential C	oncern						
rce Medium	Exposure Medilum	Exposure Point	Esposure Route	Parameter	Symbol	Units	Non Contaminant- Specific Parameters	1,1,22-Tetrachloroethane	1,1 2-Irchloroethane	1.1-Dichloroefhane	Total 1,2 Dichloroethene	1,2.4 Trichlarobenzene	1,2-Dichlaroethane	1.2-Dichloropropane	1,3-Dichlorobertzene	1,4-Dichlarabenzene	2 4 6-Trichorophenol	2.4-Diritrotoluene	2,6-Dinitratatuene	2-Criorophenol	3 3-Dichlorobertadine	4 6-Ditalino-2-Meltry/ Phenol	Aroctor-1016	
				Inhalation Cancer Slope Factor	CSF _{trib}	kg-d/mg fraction		2.03E-01 1.25E-12	5 70E-02 2.31E-14				9 10E-02 6.49E-14			2.20E-02 1 10E-11	1 09E-02 0.00E+00						4 00E-01 2.46E-13	0
				Total carcinogenic risk for expasure route	Ř,	fraction		***************************************	2010-14				5.172.17				0002-00						2400-10	•
				Average Intake from Inhalation non-carcinogens Inhalation Reference Dose Hazard Quotient	L RfD _{inh} HQ	mg/kg-d mg/kg-d mg/kg-d		7 17022E-11	4 731398-12	9 45858E-09	3.93074E-10	6.31496E-10 1 14E-03 5.53944E-07	8.31577E-12 1 405-03 5.93984E-09	1 145-03	5 28395E-09	5.83167E-09 2.30E-01 2.53551E-08	0	0	0	2.74604E-09	0	0	7 16877E-12	
				Total Hazard Index	HI_	mg/kg-d																		
	Surface Water	C ree k	incidental ingestion of creek water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time concinogens Averaging time non-carcinogens	C., IR EF ED BW AT., ATn.,	ug/l mg/m3 l/d d/y y kg d d	0.05 52 6 15 25.550 2.190					0.003415705 0.003415705								0 001482685 0.001482685			4.276E-07 4.276E-07	
				Average Intake from Ingestion carcinogens Ingestion Cancer Stope Factor Risk Total carcinogenic risk for exposure route	l, CSF. R R,	mg/kg-d kg-d/mg traction fraction		1 57586E-12 2.00E-01 3 15E-13	5.70E-02		6.85807E-09	1.3903.56-10	1.05108E-11 9 10E-02 9 56E-13	6.80E-02	1 12849E-08	1 35446E-08 2.40E-02 3.25E-10	3.28583E-12 1 10E-02 3.61E-14	6.80E-01	6.70E+00		5.06286E-12 4 50E-01 2.28E-12		1 74052E-14 4.00E-01 6.96E-15	
				Average Intake from Ingestion non-carchogens Ingestion Reference Dose Hazzard Quotient Total Hazard Index	RFD. HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1.8385E-11 6.00E-02 3.06416E-10	4 00E-03		8.00108E-08 1 00E-02 8.00108E-06	1 00E-02	2.005-02	1 10E-03	1.31657E-07 3.00E-02 4 38857E-06	3.00E-02	3.83347E-11 1.00E-04 3.83347E-07		1.00E-03	5.00E-03	5.90667E-11	1 00E-04	2.03061E-13 7.00E-05 2.90087E-09	
			Dermal contact with creek water	POE concentration	C _w	ug/l		3.87145E-Q5	0.00014692	0.005107025	0 168484251	0.003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.07239E-05	0 001055151	0.0001112	0.001482685	0.000124381	7.99002E-05	4.276E-07	2
				event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Stin surface area Body weight Averaging time	tevent Doevers EV ED EF SA BW AT AIn ₀	hr mg/cm2-event events/day y d/y cm2 kg d/y d	2 1 6 52 6,600 15 25,550 2,190	1.012 89 5-12				9.32615E-10								3.66143E-11				1.
				Averaging time non-carcinogens Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk	DAD _o CSF _{das} R R _o	mg/kg-d kg-d/mg fraction fraction	2.190	5 44227E-12 2 00E-01 1.09E-12	5 70E-02		1.89193E-08	5.01093E-09	1.598725-11 9.106-02 1.456-12	6.80E-02	2.89968E-07	2 52537E-07 2.40E-02 6.06E-09	6 8542E-11 1 10E-02 7.54E-13		6.70E+00		5.59672E-11 4 50E-01 2.52E-11	6.10206E-12	0 4 006-01 0 006+00	Ī
				Total carcinogenic risk for exposure route Absorbed dase for non-carcinogens Dermal Reference Dase Hazard Quotient Total Hazard Index	DAD _{rec} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6 34932E-11 6 00E-02 1 05822E-09		1 00E-01	1 00€-02		2.00E-02	1 105-03	3.38296E-06 3.00E-02 0.000112765	3.00E-02	7.99656E-10 1.00E-04 7 99656E-06	2 00E-03	1.00E-03	2.29516E-09 5.00E-03 4.59033E-07	6.52951E-10	7.11907E-11 1.00E-04 7 11907E-07	7 00E-05 0	
			Carcinogenic risk - all routes (detect Carcinogenic risk - all routes (undete																					
-			TOTAL CARCINOGENIC RISK - ALL RO Non-Carcinogenic risk - all routes (de	UTES tected arganics)	Sum Rt	fraction		8 80E-11	2.94E-10	0 00E+00	0 00E+00	0.00€+00	9 68E-10	1 52E-12	0 00E+00	1 396-08	8 39E-13	8 78E-11	5 38E-11	0 00E+00	2 99E-11	0 00E+00	1 805-12	_
			Non-Carcinogenic risk - all routes (un TOTAL NON-CARCINOGENIC HAZARI		B 131	traction		1 /3638 66	1 /3000E 88	1 652535 63	3 5555312 52	0 002318458	0 000 ATE AE	/ ATE AND AR	0.00011300	A 5501 20002	8 001592 N/	7 3000 PE N3	K 515115 AA		- F	1 40443E-06	A SASSET AS	_

Notes.

1- ug/1 = micrograms per Uller

2- ug/m3 = micrograms per cubic meter

3- h/d = hours per day

4- l/d = hours per day

5- d/y = days per year

6- y = year

7- kg = klagram

6- d = day

9- hy = hour

10- mg/kg-d = milligrams per klagram per day

11- Lg-d/mg = klagrams per day per milligram

12- cm2 = square continenter

13- ms/Nr = cubic meter per hour

14- mg/m3 = milligrams per cubic meter

14 mg/m3 = miliigrams per cubic meter 15-mg/cm2-event = miliigrams per square contimeter per event 14-mg/cm3-event = miliigrams per cubic contimeter per event

TABLE 7-22
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

						***	-						·			C)	emicals of Pol	entral Concer	n			. =			
Exposure Route	Parameter	Symbol CSF _{tre}		Arocio-1222	Aroctor-1242	10-900 F	103900 P	Arockor-1280 (Filtered)	2.73E-02	3.00 Berzo(a) anthracene	3 88-1-0 00 Permo(a) pyreme	999 999 999 999 999 999 999 999 999 99	Serzo(k) fluoranthene	8 bs(2-Chloroethy) Ether	bs(2-Chlorokopropy) Effner	Bis (2-ethythexyl phthodate)	Bromodichiaromethane	Carbon Tetrachloride	Chlorobenzene	Critorodibromomethane	Chlorodom	S Diberzolah/Anthracene	Diberzofuran	Hexachloro-1,3-Butadiene	·
	Inhalation Cancer Stope Factor Risk	R	kg-d/mg fraction	0.000+00		0.00E+00	1 08E-13		1.106-12	0 00E+00	0 00E+00	9.206-13	0.00E+00	1.715-11				5.205-02 2.865-13			8.10E-02 2.59E-12	3.08E-01 0.00E+00		7 70E-02 1 41E-13	1 61E+ 2.93E-
	Total carcinogenic risk for exposure route	R,	traction																						
	Average intake from inhalation non-carcinogens inhalation Reference Dase Hazard Quotient Total Hazard Index	l _a RfD _{seb} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.86751E-12	0	3 15426E-12	1.29038E-10	4 704E-10 8.57E-03 5.48891E-08	0	0	3 48402E-11	0	1 7205E-10	0	0	7 16877E-11	6.40743E-11	7.99036E-09 1.70E-02 4.70021E-07	5.878395-12	3.72776E-10	0	2.36569E-11	2.13629E-11	2.12196
ncidental ingestion of creek water	POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens	C., C., IR EF ED BW AT., ATn,	ug/I mg/m3 I/d d/y Y kg d		1 71027E-07 1.71027E-07			7 6962 1E-06 7 6962 1E-06									0.002226 0.002226	3.4596E-05 3.4596E-05			0 011575497 0.011575497			1.27415E-06 1.27415E-06	
	Averaging time non-carcinogens Average Intake from ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	CSF. R R,	mg/kg-d kg-d/mg fraction fraction	1.21827E-14 4.00E-01 4.87E-15	4 00E-01	4.00E-01	7.65772E-15 4 00E-01 3.06E-15	4,00E-01	1 48519E-10 5.50E-02 8.17E-12	4 94271E-14 7.30E-01 3.61E-14	4 59463E-14 7 30E+00 3.35E-13	3.71993E-16 7.30E-01 2.72E-16	2.14317E-16 7 30E-02 1.56E-17	2.17465E-10 1 10E+00 2.39E-10	3 15325E-11	8.35388E-12 1 40E-02 1 17E-13	9 060825-11 6 205-02 5,625-12	1 40821E-12 1 30E-01 1.83E-13	5.53403E-08	7 43006E-12 8.40E-02 6 24E-13	4 71175E-10	1 99009E-16 7.30E+00 1.45E-15	5 74329E-14	5 18637E-14 7 80E-02 4.05E-15	1 60E+
	Average intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	i, RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.421325-13	8 121835-14	5.27919E-14	8.93401E-14 2.00E-05 4.467E-09	3.654826-12	1.73272E-09 4 00E-03 4.33179E-07	5.7665E-13	5 360416-13	4 33992 E-15	2 50037E-15	2.5371E-09	3 67879E-10 4 00E-02 9 19697E-09	9.74619E-11 2 00E-02 4.8731E-09	1 0571E-09 2.00E-02 5.28548E-08	1.64291E-11 7.00E-04 2.34702E-08	6.45637E-07 2.00E-02 3.22819E-05	2 00E-02		2 32177E-15	4 005-03		1 90259E 8 00E 2.37824E
Dermal contact with creek water	POE concentration	C.,	ug/l	2,992976-07	1.71027E-07	1.111685-07	1.88135-07	7 69621E-06	0.003648704	1.21429E-06	1.12878E-06	9 13887E-09	5.26519E-09	0 005342537	0 000774668	0.000205232	0 002226	3.4596E-05	1.35956262	0.000182537	0.011575497	4.88911E-09	1.41097E-06	1.27415E-06	4 00642E
	event duration absorbed dose per event Event frequency Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	tevent Doeven EV ED EF SA BW AT ATn _e	hr mg/cm2-ever events/day y d/y cm2 kg d/y d	· 1809075-13	7.911586-13	5.51653E-13	1.48195E-12	3.78617E-10	1.345345-10	3.178445-12	5 06557E-12	4 16175E-14	2.36346E-14	3 17633E-11	1 55078E-10	6 52686E-11	3.77871E-11	1.99165E-12	1.077525-07	2.8797E-12	2.34503E-10	3 40744E-14	5.24028E-13	6 38038E-13	3.866096
	Absorbed dase for carcinogens Dermal Cancer Stope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{der} R R _t	mg/kg-d kg-d/mg fraction fraction	9 720145-13 4 005-01 3.895-13	4 00E-01	2.96403E-12 4 00E-01 1 19E-12	7.96249E-12 4 00E-01 3.18E-12	4.00E-01	7.33597E-10 5.50E-02 4.03E-11	1.70778E-11 2.35E-01 4.01E-12	2.72173E-11 2.35E+00 6.40E-11	2.23611E-13 2.30E-02 5.14E-15	1.26989E-13 7.30E-02 9.27E-15		8.33234E-10	3.50688E-10 1 40E-02 4.91E-12	2.0303E-10 6 20E-02 1.26E-11	1.07011E-11 1.30E-01 1.39E-12	5.7894 9E -07	1.54726E-11 8.40E-02 1.30E-12	1.25998E-09	1 83082E-13 7.30E+00 1.34E-12	2.81566-12	3.42817E-12 7.80E-02 2.67E-13	2.07725E- 1 60E+ 3.32E-
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{res} RfD _{obs} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 134025-11	4 95937E-11	3 45803E-11	9.28958E-11 2.00E-05 4.64479E-06		8.55864E-09 4 00E-03 2.13966E-06	1 99245-10	3.17535E-10	2.60879E-12	1 48154E-12	1 991085-09	9 72106E-09 4 00E-02 2.43026E-07	4 09136E-09 3.80E-03 1.07667E-06	2.36868E-09 2.00E-02 1.18434E-07	1,24846E-10 7,00E-04 1 78352E-07	6.7544E-06 6.20E-03 0.00108942	2.00E-02	2.00E-03	2.13595E-12	4 006-03		2.42345E- 8 00E- 3.02932E-
archogenic risk - all routes (detecte archogenic risk - all routes (undetec DTAL CARCINOGENIC RISK - ALL ROL	cted organics)	Sum Rt	fraction	5 245-13	3 0 1 E- 12	1 49E-12	5 21E-12	1 076-09	3.32E-09	5 30E-12	8 25E-11	2.53E-12	5 56E-13	2.68E-08	0 00E+00	7 06E-12	1,83E-11	8 94E-11	0 00E+00	1 93E-12	5 06E-08	7 89E-11	0 00E+00	3 69E-12	1 46E-
ion-Carcinogenic risk - all routes (de ion-Carcinogenic risk - all routes (un OTAL NON-CARCINOGENIC HAZARD	tected organics) detected organics)	Sum HI	fraction	0	0	0	5 83093E-06	0	0.000165818	- 0	0	0	0	0	2 52463E-07	1 38234E-06	1 72056E-07						1 1587E-08	<u> </u>	

TABLE 7-22
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL C)
MISSOURI ELECTRIC WORKS

									C	emicals of Pot	enhal Concer	,		_
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				o(1,2,3-cd]Pyrer	2			Ē	75					
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				2	Ę	- 8	8	<u>.</u> £	<u>\$</u>	8	\$	<u>5</u>		
				<u> 5</u>	ŧ	∮	Ē	8	女	₹	8	ชี		
5 B4-	December 1	Symbol	Units	-	₽.	Ð	₽	₫	Ĕ	Ę	15	3	훃	
Exposure Route	Parameter Inhalation Cancer Slope Factor	CSF _{brb}	kg-d/mg	3 08E-01		<u>_</u>	X	<u>₹</u>		0.1051.00		<u> </u>	——≝	
	Risk	R	fraction	0.00E+00						2.10E+00 5.50E-11	6 00E-03	3 00E-02 2.69E-14	ľ	
	Total carcinogenic risk for exposure route	Ř,	fraction	0.00E+00						5.302-11	1 995-13	2070-14	T 39.78E-11	
		***											2 400	
	Average intake from inhalation non-carcinogens	6	mg/kg-d	0	2 1967E-10	2.65451E-09	2.86809E-10	0	0	3.05438E-10	3.8663E-10	1 04664E-11	1	
	Inhalation Reference Dose	RfD _{Inh}	mg/kg-d			8 57E-04	5.716-04			1 40E-01	1.14E-02	2.86E-02	- 1	
	Hazard Quatient	HQ	mg/kg-d			3.09744E-06	5.02292E-07			2.18176-09	3.391495-08	3.65958E-1D	1	
	Total Hazard Index	н	mg/kg-d										UMA	
statement to a continue of a continue of a	POS concentration	C.		£ 0/6100 pm	0.0001104	0.001/200/2	0.000114075	0.007010400	7 730 407 44	0.000041117	0.00000	0.00000000		
cidental ingestion of creek water	POE concentration POE concentration	C.	ug/i mg/m³	5.26519E-09 5.26519E-09							0 029336582		I	
	Water Ingestion rate	IR	mg/m3 I/d	3-203 IYE-UY	0.0001186	U W 1433262	V.UUU154838	U.QU/212425	7.73U4ZE-06	U UQU84 I I 16	0.029336582	v.uuus25004	- 1	
	Exposure frequency	EF	d/y										ŀ	
	Exposure duration	ED	у,											
	Body weight	BW	kg										- 1	
	Averaging time carcinogens	AT _e	ď										- 1	
	Averaging time non-carcinogens	Aĭn _e	d										- 1	
	Average Intake from ingestion carcinogens	le	mg/kg-d		4.82755E-12	5.83402E-11	6.30342E-12				1 194135-09	1.322916-11		
	Ingestion Cancer Slope Factor	CSF.	ka-d/ma	7.308-01				7 00E+00	1.20E-01	5 40E-01	6 00E-03	7 20E-01	i i	
	Rsk	R	fraction	1 565-16				2 06E-09	3 786-14	1. 856 -11	7.16E-12	9 52E-12	WINDS TO THE REAL PROPERTY.	
	Total carcinogenic risk for exposure route	R,	fraction										2,382.0	
	Average intake from Ingestion non-carcinogens	l _o	mg/kg-d	2.500375-15	5.63215E-11	6.80636E-10	7.354E-11	3.4250RE-09	3.67107E-12	3 99434E-10	1 39315E-08	1 5434E-10	1	
	Ingestion Reference Dose	RfD _n	mg/kg-d	2.00007 E 12	4 00E-03	2.00E-02	5.00E-04	U-120001 V/	3.00E-02		3.00E-04	3.00E-03		
	Hozord Quotient	HQ	mg/kg-d		1.40804E-08		1 4708E-07		1.22369E-10		4.64384E-05			
	Total Hazard Index	HI	mg/kg-d										1,928-06	
termal contact with creek water		C _w	ug/l	5.26519E-09	0.0001186	0 001433262	0.000154858	0.007212425	7.73042E-06	0.000841116	0 029336582	0.000325004		
	event duration absorbed dose per event	tevent Daevent	hr mg/cm2-ever	5 40040E 14	•	2 003335-10	2 62/765-12	6 220125 11	1 025425 11	1 04/225 10	1 06659E-09	4 440036 10	- 1	
	Event frequency	EV	events/day	2470076-14	U	230000000-10	2,320/3C-12	32/7120-11	1733435-11	1.040335-10	1 000075-07	4 400035-12	ł	
	Exposure duration	ED	y										l l	
	Exposure frequency	탼	d/y											
	Skin surface area	SA	cm2										- 1	
	Body weight	₿₩	kg										- 1	
	Averaging time	AT	₫/y											
	Averaging time non-carcinogens	ATn _o	d											
	Absorbed dose for carcinogens	DAD	mg/kg-d	1.342555-13		1.07639E-09	1.35762E-11	2.83647E-10	1.039916-10	5.62195E-10	6 73030c A5	2.3968E-11		
	Dermal Cancer Slope Factor	CSF _{der}	mg/kg-a kg-d/mg	2.305-01	U	1.076376-07	1-33/620-11	2.8364/E-10 1.80E+00	1.208-01	5.62195E-10 5.40E-01	5 73079E-09 9 00E-04	7.20E-01	- 1	
	Risk	R	fraction	3.09E-14				5 115-10	1.256-11	3 04E-10	5.16E-12	1 735-11	- 1	
	Total carcinogenic risk for exposure route	Ř,	fraction	4.076-14				0 112-10	1.200-11	20-2-10	J. 10L*12	1130-11	8,176-09	
	• •												1	
	Absorbed dose for non-carcinogens	DAD _{ec}	mg/kg-d	1 5663E-12			1.58389E-10	3.30921E-09			6 68592E-08		l	
	Dermal Reference Dose	RfD _{cler}	mg/kg-d		4 00E-03		5.00E-04		3.00E-02	1.006-02	4.50E-05	3.00E-03		
	Hozard Quoflent	HQ	mg/kg-d		0	6.27894E-07	3.167785-07		4 04408E-08	6.55894E-07	0.001485759	9.32089E-08		
	Total Hazard Index	HI	mg/kg-d										2.846.03	
cinogenic risk - all routes (detecte	ad omenics)												2 59E-07	
remogenic risk - all routes (aetecte remogenic risk - all routes (andete													3 49E-09	
AL CARCINOGENIC RISK - ALL ROL		Sum Rt	fraction	2 02E-12	0.00E+00	0 00E+00	0 00E+00	2.59E-09	1 59E-11	1 52E-07	8 30E-09	1.58E-09	2.628-07	
-Carcinogenic risk - all routes (de													6.47E-02	_
n-Carcinogenic risk - all routes (un	detected organics)												1 97E-04	
AL NON-CARCINOGENIC HAZARD	SAMPLE VALUE	Sum HI	traction	0	2.49767E-09	0 000210577	8 84094F-04	0	5 14364E-08	6.73719E-06	0.002945885	2 123475-05	6.49E-02	

TABLE 7-23
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL D)
MISSOURI ELECTRIC WORKS

																Chemicals	of Potential Co	oncem						
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbol	Units	Non Contominani- Specific Parameters	1.1.2.2-Tetrachlaroethane	1.1,2-îrichlaroethane	1,1-Oichloroethane	Told 1,2 Dichloroethene	1.2.4 Trichtorobenzene	1,2-Dichlaroethane	1,2-Dichloropropane	1,3-Dichloroberzene	1.4-Dichlorobergene	2.4.6-Trichlorophenol	2.4-Diritro tolvene	2.6-Diritrotokuene	2-Chlorophenol	3.3-Dichloroberaldine	4 6-Dinitro-2-Meltry Phenol	Arockar-1016	Aroclor-1221
																								
Groundwater	Air	Indoor aar	Vapour Intrusion - Inhalation	POE concentration POE concentration Inhaldition rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcanagers Averaging time non-carchagens	Co-s Co-s IR ET ED BW ATo ATo	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25.550 2.190	7.596-06 7.598-09	9.30E-05 9.30E-08	2.27E-03 2.27E-06	7.426-03 7.426-06	4.09E-03 4.09E-06	1.925-04 1.925-07	1.06E-04 1.06E-07	8.905-03 8.906-06	6.16E-06	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	3.06E-04 3.06E-07	0 00E+00 0 00E+00	0 00E+00 0 00E+00	6.76E-08 6.76E-11	0.00E+00
				Average Intake from Inhalation carcinogens Inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	la CSF _{ini} R R ₁	mg/kg-d kg-d/mg fraction fraction		4.19218E-10 2.03E-01 8.51E-11	5.13666E-09 5.70E-02 2.93E-10	1.253795-07	4.098285-07	2.25902E-07	1.06047E-08 9 10E-02 9,65E-10	5.85468E-09	4 91573E-07	3.40235E-07 2.20E-02 7.49E-09	0 1 095-02 0 006+00	0	0	1.69013E-08	0	0	3.73374E-12 4.00E-01 1.49E-12	4.00E-01 0.00E+00
			_	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazzard Guotient Total Hazzard index	l, RfD _{ba} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4.89087E-09	5 99277E-08	1 462756-06		2.63553E-06 1 14E-03 0.002311867	1.405-03	6.83047E-08 1 14E-03 5.99164E-05	5.73501E-06	3.96945-06 2.305-01 1.72583E-05	0	0	0	1.97181E-07	0	0	4.35603E-11	0
	Groundwater	Tap Water	ingestion of top water	POE concentration POE concentration Water ingestion rate Exposure trequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C.,, C.,, IR EF ED BW AT., ATn.,	ug/l mg/m3 I/d d/y y kg d	350 6 15 25,550 2,190	0 09259 0.09259	0.15444 0.15444	12.214 12.214	10 97 10 97	60 52 60 52	0.27144 0.27144	0 14508 0 14508	43.99 43.99	49 62 49 62	0 19306 0 19306	1 10916 1 10916	0.266 0.266	3.546 3.546	0.29747 0.29747	0.19109 0 19109	0.229 0.229	0 13282 0 13282
				Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _o R R _t	mg/kg-d kg-d/mg fraction fraction		5.07342E-07 2.00E-03 1 01E-07	8 46247E-07 5 70E-02 4 82E-08	6.49265-05	6.01096E-05	0.000331616	9 105-02 1.35E-07	7.94959E-07 6.80E-02 5.41E-08	0.000241041	0 00027189 2.40E-02 6.53E-06	1.05786E-06 1 10E-02 1 16E-08	6.07759E-06 6.90E-01 4.13E-06	1 45753E-06 6 70E+00 9.77E-06	1.943016-05	1 62997E-06 4.50E-01 7.33E-07	1.04707E-06	1.25479E-06 4 00E-01 5.02E-07	4 00E-0
				Average intake from ingestion non-carcinogens ingestion Reference Dase Hazard Quotient Total Hazard Index	i, RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	4 005-03	0.000780804 1.00E-01 0.007808037	1.005-02	1.00E-02	2.005-02	9.27452E-06 1 10E-03 0.008431382	3 00E-02	3 00E-02	1,23417E-05 1 00E-04 0.123417352	7 09052E-05 2.00E-03 0.035452603	1 00E-03	5 00E-03	1 90163E-05	1.22158E-05 1 00E-04 0 122157991	1 46393E-05 7.00E-05 0.20913242	8 490786-04
			Dermal contact with top water	POE concentration event duration absorbed dase per event Event frequency Exposure duration Exposure frequency Sixin surface area Body weight Averaging time Averaging time non-carchagens	Cw tevent Doever EV ED EF SA BW AT ATn _b	ug/l hr mg/cm2-eve events/day y d/y cm2 kg d/y d	1 6 350 6.600 15 25.550 2.190	0.09259 1.31293E-09	0 15444 2.122\6E-09	12.214 1.44936E-07	10 97 1 470426-07	60.52 1 16844E-05	0.27144 2.00651E-09	0.14508 2.10687É-09	43.99 5 93365E-06	49.62 4 85357E-06	0.19306 2.15732E-08	1 10916 1 00576E-08	0.266 0	3.546 5.85864E-08	0.29747 1 76154E-08	0.191 <i>0</i> 9 1.920 <i>5</i> 9E-09	0 229 0	0.13285 5.67678E-06
				Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{der} R R _t	mg/kg-d kg-d/mg traction traction		6.19469E-08 2.00E-01 1.24E-08	7,67467E-08 5.70E-02 4 37E-09	5.24152E-06	5.31769E-06	0.000422559	7.25641E-08 9 10E-02 6.60E-09	7.61936E-08 6 80E-02 5.18E-09	0.000214587	0.000175526 2.406-02 4.216-06	7.80182E-07 1 10E-02 8.58E-09	3 63728E-07 8 00E-01 2,91E-07	0 6.70E+00 0 00E+00	2 11 874E-0 6	6.37049E-07 4 50E-01 2.87E-07	6.9457E-08	0 4 00E-01 0.00E+00	2.05297E-06 4.00E-01 8.21E-07
				Absorbed dase for non-carchagens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		7.22714E-07 6 00E-02 1.20452E-05	4 00E-03	6.1151E-05 1 00E-01 0.00061151	1.00E-02	1 00E-02	2.00E-02	8.88925E-07 1 10E-03 0 000808114	3.00E-02	3 00E-02	1.00E-04	2.00E-03	1 00E-03	2.47186E-05 5.00E-03 0.004943729		8.10332E-07 1 00E-04 0 008103318	0 7 00E-05 0	2.39513E-05
(only calculated	Air for COPC with Henry	indoor Air s Law > 1e-5 atm.m3/	Vapors from lap water /mol. those with a "Y")	Concentration in top water Concentration in top water Volatilization factor POE concentration Inholation rate Exposure fine Exposure frequency Exposure duration Body weight Averaging time carcinogens	C C V C R F F F B W A.	ug/l mg/m3 dimensionles mg/m3 m3/hr h/d d/y y kg d	0 42 24 350 6 15 25.550	0.09259 0.09259 0 000046295	0 15444 0 15444 0 0.00007722	12.214 12.214 7 0.006107	10.97 10.97 0.005485	60 52 60.52 7 0.03026	0.27144 0.27144 0.00013572	0 14508 0 14508 / 0.00007254	43.99 43.99 0.021995	49 62 49 62 (0 02481		1 10916 1 10916 0	0.266 0.266 0	3.546 3.546 0.001773	0.29747 0.29747 0	0.19109 0 19109 1	0.229 0 229 Y 0.0001145	0 1328; 0 1328; (
				Averaging time non-carcinogens Average intake from inhalation carcinogens	ATn _o	d mg/kg-d	2,190	2.55701E-06	4,26508E-06	0.000337307	0.000302952	0 001671347	7.49621E-06	4 00659E-06	0 001214847	0.001370328	0	0	0	9 79279E-05	0	0	6.32416E-06	(

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TABLE 7-23
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL D)
MISSOUN ELECTRIC WORKS

									-				<u> </u>												CIRC WOLK
															Þ	C+ ***	nemicals of Pa	tential Concer	Th						
Exposure Route	Parameter	Symbol	Units	Arockar-1232	Arockar-1242	Aroctor-1248	Arockor-1254	Arocker-1260 (Filtered)	Вегделе	Berzo(a) anthracene	Berzo(a) pyrene	Berzo(b)fluoranthene	Benzo (k) fluoranthene	bis(2-Chioroethyl) Ether	bs(2-Civlorokopropyl) Eff	8s (2-eiftyfhexyl phifhalaf	Bromodichloromethane	Carbon Tetrachloride	Chlorobergene	Chlorodibramomethane	Chloroform	Diberzo(a.h)Antfracene	Diberzofuan	Hexactione-1 3-Butadien	:
					-							·													
Vapour intrusion - inhalation	POE concentration POE concentration Inhalation rate Exposure intre Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Co-h Co-h IR ET ED BW ATo	ug/m3 mg/m3 m3/hr h/d d/y y kg d d	0.00E+00 0.00E+00	3.48E-08 3.48E-11	0.00E+00 0.00E+00	5.00E-08 5.00E-11	2.08E-06 2.08E-09	2.17E-06	0.00E+00 0.00E+00	0.00E+00 0.00E+00	5.215-08 5.215-11	0.00E+00 0 00E+00	4.116-04 4.116-07	0.00E+00 0.00E+00	0.00E+00	1.20E-03 1.20E-06	3.04E-05 3.04E-08	I 52E-03	9,875-08	1 13E-02 1 13E-05	0.00E+00			
	Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	la CSF _{inh} R R ₁	mg/kg-d kg-d/mg fraction fraction	0 4.005-01 0.005+00	1.9221E-12 4.00E-01 7.69E-13	0 4.00E-01 0.00E+00	2.76164E-12 4 006-01 1.10E-12	4.00E-0)	1.19855E-07 2.73E-02 3.27E-09	0 3 086-01 0 00 6+ 00	0 3.08E+00 0.00E+00	2.87763E-12 3.08E-01 8.86E-13	0 3.08E-01 0.00E+00	2.27007E-08 3 16E+00 2.63E-08	0	0	6.62795E-08	1 67908E-09 5.20E-02 8.73E-11		5,45148E-09	6.24132E-07 8.10E-02 5.06E-08	0 3.08E-01 0.00E+00		4.131425-11 7.705-02 3 185-12	1 61E+0
	Average intake from inhalation non-carchogens inhalation Reference Dose Hazard Quotient Total Hazard Index	RfD _{mh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.24245E-11	0	3.22192E-11	1.34032E-09	1.39831E-06 8.57E-03 0.000163164	0	0	3.35724E-11	0	2.64842E-07		0	7.7326E-07	1.95893E-08	0 000979463 1 70E-02 0.057615471	6.36007E-08	7.281536-06	0	2.09425E-07	4.81999E-10	7.73265-1
ingestion of top water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT., ATn.,	ug/l mg/m3 l/d d/y y kg d d	0 1603 0 1603	0.0916 0.0916	0 05954 0.05954	0.10076 0.10076	4.122 4.122	75.73 75.73	0 65036 0 65036	0.60456 0 60456	0 922185 0 922185	0.5313 0.5313	5.616 5.616	0.81432 0.81432	109 92 109 92	234 234	0.08274 0.08274		0.19188 0.19188	12.168 12.168	0.49335 0 49335			
	Average intake from Ingestion carchogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R	mg/kg-d kg-d/mg fraction fraction	8 78356E-07 4 00E-01 3.51E-07	5.01918E-07 4 00E-01 2.01E-07	3.26247E-07 4 00E-01 1.30E-07	5.52115-07 4 00E-01 2.21E-07	4.00E-01	0.000414959 5.50E-02 2.28E-05	3.56362E-06 7 30E-01 2.60E-06	3.31266E-06 7.30E+00 2.42E-05	5.05307E-06 7.30E-01 3.69E-06	2 91123E-06 7.30E-02 2.13E-07	3.07726E-05 1 10E+00 3.38E-05	4 46203E-06	0.000602301 1 40E-02 8 43E-06	1.28219E-05 6 20E-02 7.95E-07	4 5337E-07 1,30E-01 5,89E-08		1.0514E-06 8 40E-02 8.83E-08	6 6674E-05	2.70329E-06 7 30E+00 1.97E-05		3.73929E-06 7 B0E-02 2.92E-07	1 60 C+ C
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard index	RPD. HQI HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 02475E-05	5 85571E-06	3 80621E-06	6.44128E-06 2.00E-05 0 322063927	0 000263507	0.004841187 4.00E-03 1.210296804	4 15755E-05	3 86477E-05	5 89525E-05	3.39644E-05		4 00E-02	0 007026849 2.00E-02 0.351342466	0.000149589 2.00E-02 0.007479452	5.28932E-06 7 00E-04 0.007556164	2.00E-02	2.00E-02	1 00E-02	3.15384E-05	4.83096E-05 4 00E-03 0 012077397		8.00E-0
Dermal contact with top water	POE concentration	C,	ug/l	0.1603	0.0916	0.05954	0 10076	4 122	75.73	0 65036	0.60456	0.922185	0.5313	5.616	0.81432	109.92	2.34	0.08274	2901.18	0.19188	12.168	0 49335	0 7557	0.68242	0 6778
	event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging finne Averaging finne non-carcinogens	tevent Daever EV ED EF SA BW AT ATn _o	hr mg/cm2-ever events/day y d/y cm2 kg d/y d	6.85129E-08	2.99626E-07	2.089215-07	5.61245-07	0.000143389	1.76209E-Q6	1.20373E-06	1 918425-06	2.96952E-06	1 6864E-06	2.26685E-08	1.1527E-07	2.471846-05	2.808791-08	3.28754E-09	0.000152749	2.140495-09	1.61945-07	2.43136-06	1.984595-07	2.41637E-07	4.62517E-03
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{ebb} R R _f	mg/kg-d kg-d/mg fraction fraction	2.47773E-06 4 00E-01 9 91E-07	1.083585-05 4.00E-01 4,33E-06	7.5555E-06 4 00E-01 3 02E-06	4.00E-01	4.00E-01	6.37248E-05 5.50E-02 3.50E-06	4.35323E-05 2.35E-01 1.02E-05	6 93786E-05 2.35E+00 1 63E-04	0 000107391 2.306-02 2.476-06	6.09875E-05 7.30E-02 4.45E-06	8 19794E-07 1 10E+00 9.02E-07	4 168665-06	0 000893926 1 40E-02 1.25E-05	1.01578E-06 6 20E-02 6.30E-08	1 18892E-07 1 30E-01 1.55E-08	0.005524088	7.74093E-08 8.40E-02 6.50E-09	5 85645E-06	8.79266E-05 7 30E+00 6.42E-04	7.17714E-06	8.73864E-06 7.80E-02 6.82E-07	1 60E+00
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.89068E-05	0.000126418	8.81475E-05	0 000236797 2.00E-05 11.83985998	0 060498432	0.000743456 4.00€-03 0.185863921	0.000507877	0 000809417	0 001252895	0 00071 152		4 00E-02		2 00E-02	7 00E-04	6.20E-03	2 00E-02	2.00E-03	0.00102581	4 006-03	0 000101951 2.00E-04 0.509753746	8.00E-04
Vapors from tap water	Concentration in top water Concentration in top water Volatilization factor	C., C., VF	ug/l mg/m3 dimensionless	0.1603 0.1603	0.0916 Y	0.05954 0.05954	0 10076 0.10076 y	y	75.73 y	0 65036 0 65036	0 60456 0 60456	0.922185 0.922185 y	0.5313 0.5313	5.616 5.616	0.81432 0.81432		2.34 2.34	0 08274 0 08274 y	2901 18 y		12 168 12.168	0 49335 0 49335			
nol. Those with a "Y"]	POE concentration inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C _{U-Map} IR ET ED BW AT ₀	mg/m3 m3/hr h/d d/y y kg d d	0	0.0000458	0	0.00005038	0.002061	0 037865	C	0	0 000441093	o	0 002808	6	o.	0.00117	0.00004137	1 45059	0.00009594	0 006084	0	0 00037785	0.00034121	0.00033892
	Average intake from inhalation carcinogens	i.	mg/kg-d	0	2.52967E-06	0	2.78263E-06	0 000113835	0.002091393	0	0	2.54675E-05	0	0 000155094	0	0	6.46225E-05	2.28498E-06	0 080120259	5 29904E-06	0 000336037	0	2.08697E-05	1.8846E-05	1.871956-05

TABLE 7-23
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL D)
MISSOURI ELECTRIC WORKS

									Ch	emicals of Pot	ential Concerr			
Exposure Route	Parameter	Symbol	Units	ndeno(1,2,3-cd)Pyrene	2-meitry/trapthalene	Nophtholene	Nitroberzene	Witrosod-n-propylemine	Pentachlorophenol	Tetrachlaraethene	Trichioroeithene	Vinyl Chloride	Total	
Vapour Intrusion - inhalation	POE concentration POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens	Code Code IR ET ED BW AT	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00E+00 0.00E+00	2.19E-05 2.19E-08	2.75E-04 2.75E-07	6.876-06 6.876-09	0.00E+00 0.00E+00	0.00E+00 0.00E+00	1,31E-06	2.50E-02 2.50E-05	9.36E-04 9.36E-07		
	Averaging time non-carcinogens	Aīn _e	d											
	Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l _e CSF _{Inh} R R	mg/kg-d kg-d/mg fraction fraction	0 3.08E-01 0.00E+00	1 20965-09	1.51895-08	3.79456-10	0	0	7.23551E-08 2.10E+00 1.52E-07	1.38082E-06 4 00E-01 5.52E-07	5 1698E-08 3.00E-02 1.55E-09). 9864	
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	I _e RfD _{inh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	1.41125-08	1.77205E-07 8 57E-04 0.000206774	5.71E-04		0	8 441425-07 1.405-01 6.029595-06	1 61096E-05 1 14E-02 0 001413122	2.86E-02	6.19842	_
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure trequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT., ATn.,	ug/i mg/m3 l/d d/y y kg d	0.5313 0.5313	0.2837 0.2837	3.4278 3.4278	0.37036 0.37036	7 5816 7 5816	4 14032 4 14032	5.39 5.39	15.25 15.25	0.34164 0.34164		
	Average Intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R	mg/kg-ci kg-cl/mg fraction fraction	2.91123E-06 7.30E-01 2.13E-06		1.87825E-05	2.02937E-06	4.1543E-05 7 00E+00 2.91E-04	2.26867E-05 1.20E-01 2.72E-06	2.95342E-05 5.40E-01 1.59E-05	8.35616E-05 4.00E-01 3.34E-05	0.000001872 7 20E-01 1.35E-06	6.018-6-6	
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hozard Quotient Total Hazard Index	i, RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	3.39644E-05	1.81361E-05 4.00E-03 0.004534018	0 000219129 2 00E-02 0 010956438	5.00E-04	0.000484668	3.00E-02	0.000344566 1.00E-02 0.034456621	3.00E-04	0 00002184 3 00E-03 0.00728	1319-09	
Dermal contact with tap water	POE concentration	C.	ug/l	0 5313	0.2837	3.4278	0.37036	7.5816	4 14032	5.39	15.25	0.34164		
	event duration absorbed dase per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carchogens	tevent Doewent EV ED EF SA BW AT AIn _e	hr	1 782896-06	0	3.29882E-07	3.98612E-09	3.69993E-08	7 32983E-06	4 7412E-07	3 739365-07	2.80865E-09		
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{der} R R _t	mg/kg-d kg-d/rng fraction traction	6 4477E-05 2.30E-01 1 48E-05		1.193E-05	1 44156E-07	1.33806E-06 1 80E+00 2.41E-06	0 000265079 1.20E-01 3.18E-05	1.71463E-05 5 40E-01 9 26E-06	1.35232E-05 6.00E-02 8.11E-07	1.01573E-07 7.206-01 7.31E-08	3.02E-03	
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quollent Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0.000752231	4 00E-03	0.000139183 2 00E-02 0 006959146	5 00E-04	1 56107E-05	0.003092585 3.00E-02 0.103086176	0 00020004 1.00E-02 0.020003964	0,00015777 4 50E-05 3,506007297	3 00E-03	3.04E+01	
Vapors from tap water	Concentration in top water Concentration in top water	C _w	ug/l mg/m3	0.5313 0.5313		3 4278 3.4278	0.37036 0.37036	7.5816 7.5816	4 14032 4 14032	5.39 5.39	15.25 15.25	0.34164 0.34164		
, those with a "Y"]	Volatilization factor POE concentration Inhabition rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens	VF Cottop IR ET ED BW ATa	climensionless mg/m3 m3/hr h/d d/y y kg d	0	У	у ,	y .	0	0	y	y	y		
	Averaging time non-carcinogens Average intake from inhalation carcinogens	ATN₀ Io	d mg/kg-d	0	7.834785-06	9.46636E-05	1,0228E-05	0	0	0.000148853	0.000421151	9 43488E-06		

TABLE 7-23 RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL D) MISSOURI ELECTRIC WORKS

																Chemicat	of Potential C	concern						
urce Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbol CSF _{BA}		Non Contaminant- Specific Parameters	01:22-leftachkaroethane	20102 DE-2017 DE-1747	1,1-Dichloroethane	Total 1.2 Dichlaroethene	1,2.4 Inchloroberzene	3,1 2-Dichlaroethane	1,2-Dichloropropane	1.3-Dichlorobertæne	31.4Dichloroberzene	2.4.6-Trict-lonophenol	2.4-Diritrotokene	2.6-Dinitrotoluene	2-Chlorophenol	3.3-Dichlorobenzidine	4.6-Divitio-2-Methyl Phenol	Arocia-1016	
				Inhalation Cancer Slope Factor Risk	R R	rg-a/mg fraction		5.196-07	2.43E-07				9 10E-02 6.82E-07			2.20E-02 3.01E-05	1 09E-02 0.00E+00						4 00E-01 2.53E-06	4.0
				Total carcinogenic risk for exposure route	R,	fraction																		
				Average intake from inhalation non-carcinogens	l _e	mg/kg-d		2.98317E-05	4.97 <i>5</i> 93E-05	0 00393525	0.003534444	0.019499047	8.74557E-05	4,67436E-05	0.014173216	0.015987156	0	0	0	0.001142492	0	٥	7.37819E-05	
				Inhalation Reference Dose	RfD _m	mg/kg-d						1 14E-03	1 40E-03	1 14E-03		2.30E-01			_		_	_		
				Hazard Quotient	HQ	mg/kg-d						17 10442682	0.062468384	0.041003143		0.069509375								
				Total Hazard Index	HI	mg/kg-d															· <u></u>			
	Surface Water	Creek	Incidental ingestion of creek water	POE concentration	C.	ug/l		3.87145E-05	0.00014692	0.005107025	0.168484251	0.003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.07239E-05	0.001055151	0.0001112	0.001482685	0.000124381	7.99002E-05	4.276E-07	2.479
			-	POE concentration	C.	mg/m3		3.871455-05				0.003415705										7.99002E-05	4.276E-07	
				Water ingestion rate	IR	l/d	0.05																	
				Exposure frequency	EF.	d/y	52																	
				Exposure duration Body weight	ED BW	y ka	15																	
				Averaging time carcinogens	AT _o	ď	25.550																	
				Averaging time non-carcinogens	ATn _e	ď	2,190																	
				A Lade been been the combined				1 57586E-12	C 0000F 10	0.070707.10			1 651607 14			1 5511/5 50								
				Average intake from ingestion carcinogens ingestion Cancer Slape Factor	C2Ł"	mg/kg-d kg-d/mg		2.00E-01	5.70E-02		6.8580/12-01	7 1.39035E-10	1.05108E-11 9.10E-02		1.12849E-08	2.406-02	3.28583E-12 1 10E-02		4.52634E-12 6.70E+00	6.03519E-11	5.06286E-12 4.50E-01	3.2523E-12	1.74052E-14 4.00E-01	1.009
				Pick	R R	traction		3.155-13	3.415-13				9.56E-13			3.25E-10			3.036-11		2.28E-12		6.96E-15	4
				Total carcinogenic risk for expasure route	R,	fraction							7,202.10			2252 10			3 -002-11		2202.12		G/5C 15	-,
				Average intake from ingestion non-carcinogens	le Maria	mg/kg-d		1 83856-11	6 97701E-11											7.04106E-10	5.90667E-11			1 1770
				Ingestion Reference Dose Hazard Quotient	RfD _o HQ	mg/kg-d mg/kg-d		6.00E-02				2 100E-02 6 162207E-07							1.005-03	5.00E-03 1.40821E-07		1.005-04	7 00E-05 2.90087E-09	
				Total Hazard Index	H	mg/kg-d							4.0.0100	3730000	4.500576-00	3 207 332-00	3,000-712-77	2.0000000	3.200/30-00	1.400212-07		3.774330-07	270007247	
<u> </u>			Dermal contact with creek water	POE concentration	C.	υ <u>α</u> /Ι		3 87145E-05	0.00014692	0 005107025	0.16848425	0.003415705	0.000258223	0.000138016	n 2777399592	0.332753253	8.072396-05	0.001055151	0.0001112	0.001482685	0.000124393	7.99002E-05	4.276E-07	2.479
				event duration	tevent	hr	2			•				2000.00070			2,0,120,200	0.00.000.00	0.000(1112	0.00	0.00012-001	7570022 90	427000	2.47.
				absorbed dose per event	Daeven			1.01289E-12	2.99941E-12	9.41817E-11	3.52119E-09	9 9.32615E-10	2.97547E-12	3.08949E-12	5.39677E-08	4 70013E-08	1.2756BE-11	1.35316-11	0	3.66143E-11	1.04164E-11	1.13569E-12	0	1.49
				Event frequency	EV	events/day	!																	
				Exposure duration	ED EF	y 46.	52																	
				Exposure frequency Skin surface area	SA	d/y cm2	6,600																	
				Body weight	BW	kg	15																	
				Averaging time	AT	d/y	25,550																	
				Averaging time non-carcinogens	Aīn _e	d	2.190																	
				Absorbed clase for carcinogens	DAD.	mg/kg-d		5.44227E-12	1.61158E-11	5.06038E-10	1.891935-00	8 5.01093E-09	1.598726-11	1.659985-11	2.899686-07	2.52537E-07	6 8542E-11	7.27022E-11	0	1 96728E-10	5.59672E-11	6.10206E-12	0	8.053
				Dermal Concer Slope Factor	C2£**	kg-d/mg		2.006-01					9 10E-02	6.80E-02		2.40E-02			6.70E+00		4.50E-01		4.00E-01	4.
				Rbk	R	fraction		1 095-12	9 19E-13				1.45E-12	1,135-12		6.06E-09	7.54E-13	5 82E-11	0.00E+00		2.52E-11		0.00E+00	3.
				Total carcinogenic risk for exposure route	R,	fraction																		
				Absorbed dose for non-carcinogens	DAD _m	mg/kg-d		6.34932E-11	1.880185-10	5.90377E-09	2.20725E-0	7 5.84609E-08	1.86517E-10	1 93665E-10	3.38296E-06	2.94627E-06	7 99656E-10	8.48192E-10	0	2.29516E-09	6.52951E-10	7.11907E-11	0	9.396
				Dermal Reference Dase	RfD _{der}	mg/kg-d		6 00E-02											1.00E-03			1.00E-04	7 00E-05	
				Hazard Quotient	HQ	mg/kg-d		1 05822E-09	4 70044E-08	5.90377E-06	2.20725E-0	5 5.84609E-06	9 32587E-09	1 76059E-07	0 0001 12765	9.8209E-05	7.99656E-06	4.24096E-07	0	4.59033E-07		7 11907E-07	0	
				Total Hazard Index	Н	mg/kg-d																		
			Carcinogenic risk - all routes (detects Carcinogenic risk - all routes (undete																					
			TOTAL CARCINOGENIC RISK - ALL RO	UTES	Sum Rf	fraction		6.33E-07	2,965-07	0 00E+00	0 00E+0	0 00E+00	8 25E-07	5 92E-08	0 00E+00	4 096-05	2.025-08	4 426-06	9 77E-06	0 00E+00	1 02E-06	0 00 E+ 00	3 03E-06	1
			Non-Carcinogenic risk - di routes (de																					
			Non-Carcinogenic risk - all routes (un TOTAL NON-CARCINOGENIC HAZARI		Sum HI	fraction		0 0001 10497	0.002692126	0.00841943	0.07636189	5 17 9866156	0.063466717	0.050302702	0 177305710	0.243625514	0.214447013	0.037575094	0.012004410	0.050281315	- 6	0 1302624	0.200132/22	
			TOTAL INSTITUTION OF THE PARTY					J 0001.10077	J 002072120	J 000-170	. 30,000107		2 000700/1/	- WWW.2772	U 177000/17	~ ~~~~~~~	0 21444/010	0 00/0/0024	U 01700-1017	0 000001313		0 1302024	U-207 102423	

Notes.

1- ug/l = micrograms per Liter

2- ug/m3 = micrograms per cubic meter

3- h/d = hours per day

4- l/d = filers per day

5- d/y = days per year

6- y = year

7- kg = billogram

8- d = day

9- hr = hour

10- mg/kg-d = milligrams per kilogram per day

11- kg-d/mg = kilogram per day per milligram

12- cm2 = square continueter

13- m3/hr = cubic meter per hour

14- mg/m3 = milligrams per cubic meter

15- mg/cm3-everd = milligrams per square centimeter per event

16- mg/cm3-everd = milligrams per cubic centimeter per event

TABLE 7-23
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL D)
MISSOURI ELECTRIC WORKS

																Ci	emicals of Po	tential Concer	m		 *				
Esposure Route	Parameter	Symbol		Aroclor-1232	Arockar-1242	Arockor-1248	Aroclor-1254	Arocker-1260 (Filtered)	Benzere	Benzo(a) anthrocene	Benzo(c) pyrene	Benzo(b)fluoranthene	Bergo(k)fluorarithene	Ds(2-Charoethyl) Ether	bs/2-Charokopropy) Effisi	Bs (2-ethymexyl phithatale)	Bromodichlaromethane	Carbon Tetrachloride	Chlorobertzene	Chlorodilaromomethane	Chloroform	Diberzo(a.h)Anifracene	Dibergolutan	Hexachioro-1,3-Butadiene	
	Inhalation Cancer Slope Factor Risk	C2F _M	kg-d/mg fraction	4.00E-01 0.00E+00	4 00E-01 1.01E-06	4 00E-01 0.00E+00	4 00E-01 1.11E-06	4,00E-01 4,55E-05	2.73E-02 5.71E-05	3.08E-01 0.00E+00	3 08E+00 0.00E+00	3 08E-01 7.84E-06	3 08E-01 0.00E+00	1 16E+00 1,80E-04				5 20E-02 1.19E-07			8 10E-02 2.72E-05	3 085-01 0.00E+00		7 70E-02 1 45E-06	
	Total carcinogenic risk for exposure route	R,	fraction			0.002.00							0.000								201200	UAAL TO		102.00	
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	L RED _{MA} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.951286-05	0	3.2464E-05	0 001328075	0.024399584 8.57E-03 2.847092598	0	0	0 00029712	0	0.001809429	0	0	0.000753929	2.665815-05	0 934736351 1 70E-02 54 98449122		0.00392043	0	0 00024348	0 00021987	0 000218
incidental ingestion of creek water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT., ATn.,	ug/II mg/m3 I/d d/y Y kg d		1 71027E-07 1.71027E-07		1.8813E-07 1.8813E-07	7 69621E-06 7 69621E-06						0.005342537 0.005342537			0.002226 0 002226							1.27415E-06 1.27415E-06	
	Average intake from ingestion carcinogens ingestion Cancer Stope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R ₁	mg/kg-d kg-d/mg fraction fraction	1.21827E-14 4.00E-01 4.87E-15	6.96157E-15 4.00E-01 2.78E-15	4 00E-01	7.65772E-15 4 00E-01 3 06E-15	3 1327E-13 4.00E-01 1.25E-13	1.48519E-10 5.50E-02 8.17E-12	4.94271E-14 7.30E-01 3.61E-14	4 59463E-14 7 30E+00 3.35E-13	7.30E-01	2.14317E-16 7.30E-02 1.56E-17			8.35388E-12 1 40E-02 1.17E-13	9,060825-11 6,205-02 5 625-12	1 30E-01		7.43006E-12 8.40E-02 6.24E-13		1 99009E-16 7,30E+00 1,45E-15	5.74329E-14	5.18637E-14 7 80E-02 4 05E-15	1 60E
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	I. RfD. HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.421325-13	8.12183E-14	5.27919E-14	8.93401E-14 2.00E-05 4 467E-09	3.65482E-12	1.73272E-09 4 00E-03 4.33179E-07	5.7665E-13	5 36041E-13	4.33992E-15	2.50037E-15	2 5371E-09	3.67879E-10 4 00E-02 9 19697E-09	9 74619E-11 2.00E-02 4.8731E-09	1 0571E-09 2.00E-02 5,28548E-08	7.00E-04			1 00E-02	2.32177E-15	4.00E-03	6.05076E-13 2.00E-04 3.02538E-09	8.00E
Dermal contact with creek water	POE concentration	C.	ug/l	2.99297E-07	1 710276-07	1.11168E-07	1.8813E-07	7 69621E-06	0.003648704	1.21429E-06	1.12878E-06	9 13887E-09	5.26519E-09	0 005342537	0 000774668	0.000205232	0 002226	3.4596E-05	1.35956262	0.000182537	0.011575497	4.88911E-09	1 41097E-06	1.27415E-06	4.006428
	event duration absorbed dose per event Event frequency Expasure duration Expasure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	tevent Doever EV ED EF SA BW AT ATn _o	hr mg/cm2-ever events/day y d/y cm2 kg d/y d	1 809076-13	7.911585-13	5.51653E-13	1.48195E-12	3.78617E-10	1.36534E-10	3.178445-12	5.06557E-12	4.161755-14	2.36346E-14	3 17633E-11	1.55078E-10	6.52686E-11	3,778715-11	1 99165E-12	1.07752E-07	2.87976-12	2.34503E-10	3 40744E-14	5.24028E-13	6.38038E-13	3.86609E
	Absorbed dose for cardinogens Dermal Cancer Slope Factor	DAD _a CSF _{der}	mg/kg-d kg-d/mg	4.00E-01	4 00E-01	4 00E-01	4.00E-01	2.03431E-09 4.00E-01	5.50E-02	2.35E-01	2.35E+00		7.30E-02	1 10E+00		3.50688E-10 1 40E-02	2.0303E-10 6 20E-02	1.305-01		1.54726E-11 8.40E-02		7,30E+00	2.8156E-12	3,42817E-12 7,80E-02	1 60E4
	Risk Total cardinogenic risk for exposure route	R R,	fraction fraction	3.895-13	1 705-12	1.19E-12	3.18E-12	8 14E-10	4.035-11	4.01E-12	6. 40 E-11	5.14E-15	9 27E-15	1,885-10		4.91E-12	1.265-11	1.396-12		1.306-12		1.34E-12		2.67E-13	3.32F-
	Absorbed dase for non-carcinogens Dermal Reference Dose Hazard Quotlent Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 13402E-11	4 95937E-11	3 45803E-11	9.28958E-11 2.00E-05 4.64479E-06	2.37336F-08	8.55864E-09 4 00E-03 2.13966E-06	1 99 245-10	1175355-10	2.608795-12	1.481545-12	1.99108E-09	9.72106E-09 4 00E-02 2.43026E-07	3.80E-03	2.36868E-09 2.00E-02 1 18434E-07		6.20E-03	2.00E-02	2.00E-03	2.13595E-12	4 00E-03	3.99954E-11 2.00E-04 1 99977E-07	8 006-
Carcinogenic risk - all routes (detect Carcinogenic risk - all routes (undete	ected organics)					_					_														
OTAL CARCINOGENIC RISK - ALL RO Non-Carcinogenic risk - all routes (di	elected organics)	Sum Rt	fraction	1 34E-06	5 55E-06	3.15E-06	9 45E-06	2.13E-03	8.34E-05	1.285-05	1.B7E-04	1 40E-05	4 66E-06	2.15E-04	0 00E+00	2.09E-05	B 58E-07	1 93E-07	0 00E+00	9 485-08	2.73E-05	6 62E-04	0 00E+00	2.42E-06	6 285-0
ion-Carcinogenic risk - all routes (ur OTAL NON-CARCINOGENIC HAZAR		Sum HI	fraction	0	0	0	12.16192855	0	4.243419059	0	0	0	- 0	0	0 002517535	3 09585243	0 008072162	0 009537899	74 7111965	0 000658484	0 111956852	0	0 033010719	0 727879063	0.2980955

TABLE 7-23
RME RISK CALCULATIONS FOR CHILD RESIDENT (HIGH TCE SLOPE FACTOR, WELL D)
MISSOURI ELECTRIC WORKS

					-			-	Ch	emicals of Pot	ential Concern			
Exposure Route	Parameter	Symbol	Units	ndeno(1,2,3-cd)Pyrane	2-methytnapthalene	kaphihalene	ultrobertzene	vihosod-n-propytombre	entochlorophenol	eirachloroeithene	richkroeithene	/myl Chloride	ota	
	Inhalation Cancer Slope Factor	CSF _{Inh}	kg-d/mg	3 085-01						2.10E+00	4 00E-01	3 00E-02		
	Risk	R	fraction	0.00E+00						3.13E-04	1 685-04	2.83E-07	1	
	Total carcinogenic risk for exposure route	R _t	fraction											20
	Average intake from inhalation non-carcinogens	L.	mg/kg-d	0	9 14058E-05	0 001104409	0 000119327	0	0	0.001736614	0.004913425	0.000110074		
	Inhalation Reference Dose	RfD _{Inh}	mg/kg-d	-		8 57E-04	5 71E-04	•	•	1 40E-01	1.14E-02	2.86E-02		
	Hazard Quotient	HQ	mg/kg-d				0.208978893			0.012404384				
	Total Hazard Index	н	mg/kg-d			. 25557 1742				21010101010	0 10 10 12 10 2		7 70 S. T.	62
ncidental ingestion of creek water		C _w	ug/l	5 26519E-09							0.029336582			
	POE concentration	C.	mg/m3	5 26519E-09	0.0001186	0.001433262	0.000154858	0.007212425	7 73042E-06	0.000841116	0.029336582	0.000325004		
	Water Ingestion rate	IR .	l/d											
	Exposure frequency	ED ED	d/y										1	
	Exposure duration Body weight	BW	y ka											
	Averaging time carcinogens	AT _a	d											
	Averaging time non-carcinogens	ATno	ď											
	Average intake from ingestion carcinogens	ار د	mg/kg-d		4.82755E-12	5.83402E-11	6.30342E-12					1.322915-11	ţ	
	Ingestion Cancer Slope Factor	CSF.	kg-d/mg	7.30E-01				7 00E+00	1.205-01	5 40E-01	4 006-01	7 206-01		
	Risk	R	fraction	1.56E-16				2.06E-09	3.786-14	1.85E-11	4.78E-10	9.52E-12	***************************************	
	Total carcinogenic risk for exposure route	R,	fraction											(
	Average Intake from Ingestion non-carcinogens	l _e	mg/kg-d	2.50037E-15	5.63215E-11	6.80636E-10	7.354E-11	3.42508E-09	3.67107E-12	3.99434E-10	1.39315E-08	1.5434E-10		
	Ingestion Reference Dose	RfD.	mg/kg-d		4 00E-03	2.00E-02	5.00E-04		3.00E-02	1 00E-02	3.00E-04	3.00E-03	l l	
	Hazard Quotient	HQ	mg/kg-d		1,408045-08	3 40318E-08	1.4708E-07		1.22369E-10	3.99434E-08	4.84384E-05	5 14467E-08		
	Total Hazard Index	HI	mg/kg-d										4.000.0	
Dermal contact with creek water	POE concentration	C,	ug/l	5 26519E-09	0.0001184	0.001433262	0.000154858	0.007212425	7.73042E-06	0.000841116	0.029336582	0.000325004	İ	
	event duration	tevent	hr											
	absorbed dose per event	Doeven	mg/cm2-ever	2.49869E-14	0	2.00333E-10	2.52675E-12	5 27912E-11	1.93543E-11	1.04633E-10	1 06659E-09	4,46083E-12	1	
	Event frequency	EV	events/day										1	
	Exposure duration	ED	у											
	Exposure frequency	₽	d/y											
	Skin surface area	SA	cm2										l	
	Body weight	8W	kg										1	
	Averaging time Averaging time non-carcinogens	AT ATn _e	d/y d										İ	
	TO COMPANY OF THE PROPERTY OF	· ··· · •c	-											
	Absorbed close for carcinogens	DAD	mg/kg-d	1.34255E-13	0	1.07639E-09	1.35762E-11	2.83647E-10	1.03991E-10	5.62195E-10	\$ 73079E-09	2.3968E-11	1	
	Dermail Cancer Slope Factor	CSF _{de}	kg-d/mg	2.30E-01				1 80E+00	1,206-01	5 40E-01	6 00E-02	7 206-01		
	Rsk	R	fraction	3.095-14				5.11E-10	1.255-11	3.04E-10	3.44E-10	1.735-11		
	Total carcinogenic risk for exposure route	R,	fraction										8.516-09	(
	Absorbed dose for non-carcinogens	DAD _{no}	mg/kg-d	1.56635-12	n	1.25579E-08	1.58389E-10	3,30921E-09	1,21322E-09	6 55894E-09	6.68592E-08	2 79627E-10		
	Dermal Reference Dose	RfD _{cter}	mg/kg-d		4 00E-03				3.00E-02	1.00E-02		3.00E-03		
	Hazard Quotient	HQ	mg/kg-d			6-27894E-07			4.04408E-08		0.001485759	9 32089E-08		
	Total Hazard Index	HI	mg/kg-d										2.546-00	
arcinogenic risk - all routes (detects	ad amonics)												3 35E-03	
arcinogenic risk - all routes (undete	cted organics)												1 03E-03	
OTAL CARCINOGENIC RISK - ALL ROL		Sum Rt	fraction	1 70E-05	0 00E+00	0 00E+00	0 00E+00	2.93E-04	3 45E-05	3 38E-04	2 03E-04	171E-06	4.39E-03	
on-Carcinogenic risk - all routes (de													1 09E+02	
on-Carcinogenic risk - ali routes (un											7 189574261		1 41E+01	
DTAL NON-CARCINOGENIC HAZARD	PATRICIA II A. VACINE	Sum HJ	fraction			1 306814953							1 240+02	

TABLE 7-24
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL D)
MISSOURI ELECTRIC WORKS

															-	Chemicals	of Potential C	oncem					MISSOURI ELEC	
Source Medium Expo	osure Medium	Exposure Point	Exposure Route	Parameter	Symbol		Non Contaminant- Specific Parameters), 1 2,2-1e trachtoroethane	1.1,2-Trichloroethane	1.1-Dichloroethane	Total 1,2 Dichloroethene	1,2,4 Inchlorobenzene	1,2-Dichloroethane	1 2-Dichlaropropane	1,3-Dichlarobenzene	1.4-Dichlorobertzene	2.4 6-Trichlorophenol	2.4-Dinitrotokuene	2.6-Divilirotokvene	2-Chlorophenol	3 3-Dichlorobenzidine	4,6-Dinitro-2-Methyl Phenol	Araciar-1016	America: 1223
																					<u> </u>			
Groundwater	Ar	Indoor air	Vapour intrusion - inhalation	POE concentration POE concentration Inhabition rate Exposure firme Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Com Com IR ET ED BW ATo ATo	ug/m3 mg/m3 m3/hr h/d d/y y kg d d	0.42 24 350 6 15 25.550 2,190	7.59E-06 7.59E-09	9.30E-05 9.30E-08	2.27E-03 2.27E-06	7.425-03 7.425-06	4.09E-03 4.09E-06	1.92E-04 1.92E-07	1.06E-04 1.06E-07	8.90E-03 8.90E-06	6.16E-03 6.16E-06	0.00E+00	0.00E+00 0.00E+00		3.06E-04 3.06E-07	0.00E+00	0 00E+00	6.76E-11	0.00E+0
				Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l _e CSF _{tes} R R,	mg/kg-d kg-d/mg fraction fraction		4 19218E-10 2.03E-01 8.51E-11	5.13666E-09 5.70E-02 2.93E-10	1.25379E-07	4.09828E-07	2.2590ZE-07	9.10E-02 9.65E-10	5.85468E-09	4 915738-07	3 40235E-07 2 20E-02 7.49E-09	0 1 09E-02 0.00E+00	0	6	1 690135-08	Đ	0	3.73374E-12 4.00E-01 1 49E-12	4.00E-01 0.00E+00
				Average Intake from inhalation non-carcinogens inhalation Reference Dase Hazard Quotient Total Hazard Index	is RfD _{res} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	·-	4.89087E-09	6.99277E-06	1 46275E-06	4 78133E-06	2.63553E-06 1 14E-03 0.002311867	1.23722E-07 1.40E-03 8.83726E-05	1 145-03	5.73501E-06	3.9694E-06 2.30E-01 1.72583E-05	0	0	0	1 971815-07	0	0	4.35603E-11	0
G	iroundwater	Tap Water	ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C IR EF ED BW AT., ATn,	ug/li mg/m3 l/d d/y y kg d d	1 350 6 15 25,550 2,190	0 09259 0.09259	0 15444 0.15444	12.214 12.214	10 97 10 97	60.52 60.52	0.27144 0.27144	0.14508 0 14508	43.99 43.99	49 62 49 62	0.19306 0.19306	1.10916 1 10916	0.266 0.266	3.546 3.546	0.29747 0.29747	0 19109 0 19109	0 229 0.229	0.13262 0 13262
				Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	CSF。 R R,	mg/kg-d kg-d/mg fraction fraction		5.07342E-07 2.00E-01 1.01E-07	8 46247E-07 5.70E-02 4.82E-08	6.6926E-05	6.01096E-05	0.000331616	1 48734E-06 9 10E-02 1.35E-07	7.94959E-07 6.80E-02 5.41E-08	0.000241041	0.00027189 2.40E-02 6.53E-06	1.05786E-06 1 10E-02 1.16E-08	6.07759'E-06 6.80E-01 4 13E-06	1 45753E-06 6 70E+00 9 77E-06	1.94301E-05	1.62997E-06 4.50E-01 7.33E-07	1.04707E-06	1.25479E-06 4 00E-01 5.02E-07	7.27781E-07 4 00E-01 2.91E-07
				Average intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quoffent Total Hazard Index	RFD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		5.919E-06 6.00E-02 9.86499E-05	4.00E-03	1.00E-01	1.00E-02	0.003868858 1.00E-02 0.386885845	1.73523E-05 2.00E-02 0.000867616	1 10E-03	3.00E-02	0.003172055 3 00E-02 0 10573516	1 00E-04	7.09052E-05 2.00E-03 0 035452603	1 00E-03	0.000226685 5.00E-03 0.045336986	1 90163E-05	1 22158E-05 1 00E-04 0 122157991	1 46393E-05 7 00E-05 0.20913242	8.49078E-06
			Dermal contact with top water	POE concentration	C.	ug/l		0.09259	0.15444	12.214	10 97	60.52	0.27144	0 14508	43.99	49.62	0.19306	1 10916	0.266	3.546	0.29747	0.19109	0 229	0.13282
				event duration absorbed date per event Event frequency Exposure duration Exposure frequency Sich surface area Body weight Averaging time Averaging time non-carcinogens	tevent Daeven EV ED EF SA BW AT ATn _o	ht mg/cm2-event events/day y d/y cm2 kg d/y d	1 6 350 6.600 15 25.550 2.190	1.712935-09	2.12216E-09	1.44936E-07	1 47042E-07	1.16844E-05	2.00651E-09	2.10687E-09	5 93365E-06	4.85357E-06	2.157325-08	1.00576E-08	0	5.85864E-08	1 76154E-08	1.92059E-09	0	5.67678E-08
				Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{ober} R R ₁	mg/kg-d kg-d/mg fraction fraction		6 19469E-08 2.00E-01 1.24E-08	5.70E-02		5.31769E-06	0.000422559	7 25641E-08 9 10E-02 6 60E-09	7.61936E-08 6 90E-02 5.18E-09	9.000214587	0.000175526 2 40E-02 4.21E-06	7.801825-07 1 105-02 8 585-09	3.63728E-07 8 00E-01 2.91E-07	0 6.70E+00 0.00E+00	2.11874E-06	6.37049E-07 4 50E-01 2.87E-07	6.9457E-08	0 4.00E-01 0.00E+00	2.05297E-06 4.00E-01 8.21E-07
				Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Qualtent Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	8 95378E-07 4 00E-03 0.000223845	1 005-01	1.00E-02		2.00E-02	1 105-03	3.00E-02	0.002047807 3.00E-02 0 068260247	1 00E-04	2.00E-03	1 00E-03	2.47186E-05 5 00E-03 0.004943729	7 43224E-06	8.10332E-07 1 00E-04 0.008103318	7 00E-05 0	2.395136-05
	Ar	Indoor Air	Vapors from tap water	Concentration in top water Concentration in top water	c* c*	ug/l mg/m3		0 09259 0.09259	0 15444 0 15444		10 97 10 97	60 52 60 52	0 27144 0.27144	0.14508 0 14508	43.99 43.99	49.62 49.62	0 19306 0 19306	1 10916 1 10916	0.266 0.266	3.546 3.546	0.29747 0.29747	0.19109	0 229 0 229	0.13282 0.13282
(only calculated for CC	OPC with Henry's	.aw > 1e-5 atm.m3/n	nol, those with a 'Y')	Volatilization factor POE concentration inhalation rate Exposure firme Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	VF C _{s-kep} IR ET ED BW AT _c Atre	dimensionless mg/m3 m3/hr h/d d/y y kg d	0.0005 y 0.42 24 350 6 15 25.550 2.190		y	Y	1	y 1	y 1	0.00007254	0.021995	Y	0	0	0	0.001773	0	o ^v	,	0
				Average intake from inhalation carcinogens	L	mg/kg-d	2170	2.55701E-06	4 26508E-06	0.000337307	0 000302952	0 001671347	7 49621E-06	4 00659E-06	0 001214847	0 001370328	0	0	0	9 79279E-05	0	0	6 32416E-06	0

TABLE 7-24
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL D)
MISSOUN ELECTRIC WORKS

							_								_	a	nemicals of Po	tential Concer	n						
Exposure Route	Parameter	Symbol	Units	Arockar-1232	Arockar-1242	Arockor-1248	Arockar-1254	Arockar-1260 (Filtered)	Bertzene	Berzo(a) anthracene	Benzo(a) pyrene	 Berzo(b)fluoranthene	Benzo (k fluoranihene	bs(2-CNoroethyl) Ether	bs(2-Chlorolaopropyl) Elher	Bs (2-ethythexy) phtholote)	Bromodichloremethane	Carbon Tetrachloride	Chlorobenzene	Charodhomomethane	Chloroform	Diberzo(a.h)Anttracene	Diberzofurzn	Hexachlore-1,3-Butadiene	Haxachloroberzene
Vapour intrusion - Inhalation	POE concentration POE concentration Inholation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Co-h Co-h IR ET ED BW AI _c AIn _o	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00£+00 0.00£+00	3.48E-08 3.48E-11	0.00E+00 0.00E+00	5.006-08 5.006-11	2,08E-06 2,08E-09	2.17E-03 2.17E-06	00+300.0 00+300.0	0.00E+00 0.00E+00	5.21E-06 5.21E-11	0.00E+00 0.00E+00	4.11E-07	0 00E+00 0 00E+00	0.00E+00 0.00E+00	1.20E-03 1.20E-06		1.52E+00 1 52E-03		1.13E-05	0.00E+00 0.00E+00	3.25E-04 3.25E-07		1.20E-06 1.20E-09
	Average intake from inhalation carcinogers inhalation Cancer Slope Factor Risk Total carcinogerisc risk for exposure route	L CSF _M R R₁	mg/kg-d kg-d/mg fraction fraction	0 4.008-01 0.00 8+ 00	1.9221E-12 4.00E-01 7.69E-13	0 4 006-01 0.00 0+ 00	2.76164E-12 4.00E-01 1.10E-12	1 14884E-10 4,00E-01 4,60E-11	1.19855E-07 2.73E-02 3.27E-09	0 3.08E-01 0.00E+00	0 3 08E+00 0.00E+00	2.87763E-12 3.08E-01 8.86E-13	0 3.08E-01 0.00E+00	2,27007E-08 1 16E+00 2.63E-08	0	Q	6.62795E-08	1.67908E-09 5 20E-02 8 73E-11	8.3954E-05	5.45148E-09	6 241325-07 8.105-02 5.065-08	0 3.08E-01 0.00 E+0 0	1. 79507E-08	4.13142E-11 7 70E-02 3.18E-12	6.62795E-11 1 61E+00 1.07E-10
	Average Intake from Inhalation non-carcinogens Inhalation Reference Dose Hazard Quotient Total Hazard Index	L RFD _{ma} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.24245E-11	0	3.221925-11	1.34032E-09	1 39831E-06 8 57E-03 0.000163164	0	0	3 35724E-11	0	2.64842E-07	0	0	7.73265-07	1 75873E-08	0 000979463 1.70E-02 0.057615471	6.36007E-08	7.28153E-06	0	2.09425E-07	4.819996-10	7 73265-10
ingestion of tap water	POE concentration POE concentration Water ingestion rate Expasure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw Cw IR EF ED BW AT _o AIn _o	ug/i mg/m3 Vd d/y y kg d d	0 1603 0.1603	0.0916 0.0916	0.05954 0 05954	0 10076 0.10076	4.122 4.122	75.73 75.73	0.65036 0.65036	0.60456 0.60456	0.922185 0 922185	0.5313 0.5313	5.616 5.616	0.81432 0.81432	109.92 109.92	234 234		2901.18 2901.18	0.19188 0.19188		0.49335 0.49335	0 7557 0.7557		0 67784 0.67784
	Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogensc risk for expasure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction	8.78356E-07 4.00E-01 3.51E-07	5 019185-07 4 006-01 2.016-07	3.26247E-07 4 00E-01 1.30E-07	5.5211E-07 4 00E-01 2.21E-07	2.25863E-05 4.00E-01 9.03E-06	0.000414959 5 50E-02 2.28E-05	3.56362E-06 7 30E-01 2.60E-06	3,31266E-06 7,30E+00 2,42E-05	5.05307E-06 7.30E-01 3.69E-06	2.91123E-06 7 30E-02 2.13E-07	3.07726E-05 1 10E+00 3.38E-05	4.462035-06	0 000602301 1 40E-02 8.43E-06	1.28219E-05 6 20E-02 7.95E-07		0 015896877	1.05145-06 8 405-02 8.835-08	6 6674E-05	2.70329E-06 7 30E+00 1.97E-05	4.14082E-06	3 73929E-06 7 80E-02 2.92E-07	3 71419E-06 1 60E+00 5.94E-06
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	L RED. HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 024758-05	5 85571E-06	3.80621E-06	6.44128E-06 2.00E-05 0 322063927	0 000263507	0 004841187 4.00E-03 1.210296804	4.15755E-05	3.86477E-05	5 89525E-05	3.39644E-05	0 000359014	4 00E-02	0 007026849 2.006-02 0 351342466	2.006-02		0 185463562 2.00E-02 9.273178082	2.006-02		3 15384E-05	4.83096E-05 4.00E-03 0.012077397		8.00E-04
Dermal contact with tap water	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time	C,, tevent Doewer EV ED EF SA BW AT ATn,	ug/I hr mg/cm2-ever events/day y d/y cm2 kg d/y	0.1603 6 851295-08	0.0916 2 99626E-07	0 05954 2.08921E-07	0 10076 5 6124E-07	4.122 0 000143389	75.73 1 7620 7 E-06	0.45036 1.20373E-06	0 604\$6 1.91842E-06	0 922185 2.96952E-06	0.5313 1 6864E-06	5 616 2.26685E-08	0.81432 1.1527E-07	109.92 2.47184E-05	2.34 2.80879E-08	0.08274 3.28754E-09	2901.18 0.000152749	0.19188 2.14049E-09	12.168 1.6194E-07	0.49335 2 4313E-06	0 7557 1.98459E-07	0 68242 2 41637E-07	0.67784 4.62517E-07
	Averaging time non-carcinogens Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{dar} R R _t	mg/kg-d kg-d/mg fraction fraction	2.47773E-06 4 00E-01 9 91E-07	1.08358E-05 4.00E-01 4.33E-06	7.5555E-06 4 00E-01 3.02E-06	2.02969E-05 4 00E-01 8 12E-06	0 00518558 4 00E-01 2.07E-03	6.37248E-05 5.50E-02 3.50E-06	4.35323E-05 2.35E-01 1.02E-05	6.93786E-05 2.35E+00 1.63E-04	0.000107391 2.30E-02 2.47E-06		8.19794E-07 1 10E+00 9 02E-07	4.16866E-06	0 0008939926 1 40E-02 1.25E-05		1,305-01	0.005524088	7.74093E-08 8.40E-02 6.50E-09	5 85645E-06	8 79266E-05 7.30E+00 6.42E-04	7.17714E-06	8.73864E-06 7.80E-02 6 82E-07	1 67266E-05 1 60E+00 2.68E-05
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quofient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.89068E-05	0.000126418	8.81475E-05	0 000236797 2.00E-05 11.83985998	0 060498432	0 000743456 4 006-03 0.185863921	0.000507877	0.000809417	0.001252895	0 00071152	9.56426E-06	4 00E-02	3 80E-03	2.00E-02		6.20E-03	2.00E-02	6 83253E-05 2.00E-03 0 034162651	0.00102581	4 00E-03	0 000101951 2 00E-04 0 509753746	8.00E-04
Vapors from tap water not, those with a "Y")	Concentration in top water Concentration in top water Volatilization factor POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens	C. C. VF C. TR ET ED BW AT.	ug/l mg/m3 dimensionless mg/m3 m3/nr h/d d/y y kg d	0 1603 0 1603 0	0.0916 0.0916 , 0.0000458	0 05954 0.05954 0	0.10076 0 10076 7 0.00005038	4.122 4.122 9 0.002061	75.73 75.73 7 0 037865	0 65036 0 65036 0	0 60456 0 60456 0	0.922185 0.922185 0.000461093	0.5313 0.5313 0	5.616 5.616 7 0.002808	0 81432 0.81432 0	109.92 109.92 0	2.34 2.34 y 0.00117	0 08274 y	2901 18 2901 18 7 1 45059	0 19188 Y	12.168 12.168 9 0.006084	0.49335 0.49335 0	0 7557 0.7557 9 0 00037785	0.68242 0.68242 7 0.00034121	0.67784 0 67784 0.00033892
	Averaging time non-carcinogens Average intake from inhalation carcinogens	ATn _e ام	d mg/kg-d	0	2 52967E-06	0	2.78263E-06	0 000113835	0 002091393	σ	0	2.54675E-05	٥	0.000155094	0	0	6.462258-05	2.28498E-06	0.080120259	5 29904E-06	0 000336037	0	2.08697E-05	1 8846E-05	1.871956-05

TABLE 7-24
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL D)
MISSOURI ELECTRIC WORKS

												MIS	SOURI ELECTI	IC W
					-				Ci-	emicals of Pot	ential Concern	1		
Exposure Route	Parameter	Symbol	Units	Indeno[1,2,3-cd]Pyrene	2-methy/hospitholene	Naphitsalene	Mitroberzene	Mirosod-r-poop/canine	Pentachlorophenol	Tetrachloroethene	Trichloroethene	Vinyl Chloride	Total	
Vapour Intrusion - Inhalation	POE concentration POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time concinogens Averaging time non-carcinogens	Coss Coss IR ET ED BW ATo ATo	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00E+00 0.00E+00	2.19E-05 2.19E-08	2.75±04 2.75±07	6 87E-06 6.87E-09	0.00E+00 0.00E+00	0.00E+00 0.00E+00	1.31E-06	2.50E-02 2.50E-05	9.36E-04 9.36E-07		
	Average intake from inhalation carcinogens	L,	mg/kg-d	0	1.2096E-09	1,5189E-08	3.7945E-10	0	0	7.23551E-08	1 38082E-06	\$ 1698E-08		i
	Inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	CSF _{pah} R R _t	kg-d/mg fraction fraction	3.08E-01 0.00E+00						2 10E+00 1.52E-07	2.00E-02 2.76E-08	3.00E-02 1 55E-09	rees.	
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	l₀ RfD _{Mb} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	1.41126-08	1 77205E-07 8 57E-04 0.000206774	4 42692E-09 5 71E-04 7.75292E-06	0	0	1.406-01	1.61096E-05 1 14E-02 0 001413122	2.86E-02 2.10889E-05		
Ingestion of top water	POE concentration	c,	ug/l	0.5313	0.2837	3.4278	0 37036	7 5816	4 14032	5.39	15.25	0.34164		
	POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw IR EF ED BW AT _o ATn _o	mg/m3 I/d d/y y kg d	0.5313	0.2837	3,4278	0 37036	7.5816	4 14032	5.39	15 25	0.34164	:	
	Average intake from ingestion carcinogens	L	mg/kg-d	2.91123E-06	1.55452F-06	1.87825E-05	2.02937F-06	4 1543E-05	2.26867E-05	2.95342E-05	8 354145-05	0.000001872		i
	Ingestion Cancer Slope Factor Risk	CSF _e	kg-d/mg fraction	7 30E-01 2.13E-06				7 00E+00 2.91E-04	1.206-01 2.726-06	5.40E-01 1.59E-05	2.00E-02	7 206-01 1.35E-06		ĺ
	Total carcinogenic risk for exposure route	R,	fraction]	(J) (E) (A)	
	Average intake from ingestion non-carcinogens ingestion Reference Dase Hazard Quotient Total Hazard Index	K RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	3.39644E-05	4 005-03	0 000219129 2.00E-02 0 010956438	5.00E-04	0.000484668	0.000264678 3 00E-02 0 0088226	0.000344566 1.00E-02 0.034456621	0.000974886 3 00E-04 3.249619482	0.00002184 3 00E-03 0 00728	LILLAN	
Dermal contact with tap water	POE concentration	C,	ug/l	0.5313	0.2837	3 4278	0.37036	7 5816	4 14032	5.39	15.25	0.34164		i
	event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sich surface area Body weight Averaging time Averaging time non-carcinogens	tevent Daevent EV ED EF SA BW AT ATn _o	hr mg/cm2-ever everts/day y d/y cm2 kg d/y d	1.78289E-06	0	3.298825-07	3.986125-09	3 69993E-08	7.32983E-06	4 74126-07	3.73936E-07	2.808655-09		
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{dar} R R _i	mg/kg-d kg-d/mg fraction fraction	6.4477E-05 2.30E-01 1.48E-05	0	1 1935-05	1 44156E-07	1 33906E-06 1 80E+00 2.41E-06	0.000265079 1.20E-01 3.18E-05	1.71463E-05 5.40E-01 9.26E-06	1.35232E-05 3.00E-03 4 06E-08	1 01573E-07 7.20E-01 7.31E-08	3.026-85	
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient	DAD _{ne} RfD _{der} HQ	mg/kg-d mg/kg-d mg/kg-d	0.000752231	4 00E-03	0 000139183 2 006-02 0 006959146	5.00E-04	1 56107E-05	0 003092585 3.00E-02 0 103086176	3.00E-02	0.00015777 4 50E-05 3 506007297	3 00E-03		
	Total Hazard Index	HI	mg/kg-d										3045401	_
Vapors from tap water those with a "y")	Concentration in top water Concentration in top water Volatilization factor POE concentration	Cw Cw VF Co-kee	ug/I mg/m3 dimensionless mg/m3	0.5313 0.5313 0		3.4278 3.4278 9 9.0017139	0.37036 0.37036 Y 0.00018518	7 5816 7 5816 0	4 14032 4 14032 0	5.39 5.39 Y 0.002695	15.25 15.25 Y 0.007625	0.34164 0.34164 Y 0.00017082		
.,	Inhalation rate Exposure firme Exposure firme Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	IR ET ED BW AT _o	m3/hr h/d d/y y kg d	·		2.2011.30		·	·					!
	Average intake from inhalation carcinogens	l _a	mg/kg-d	0	7.83478E-06	9.46636E-05	1.0228E-05	0	0	0 000148853	0.000421151	9 43488E-06		

TABLE 7-24
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL D)
MISSOURI ELECTRIC WORKS

															Chemicais	of Potential C	concern						
Medium Exposure Medium	Exposure Point	Exposure Route	Parameter Inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	Symbol CSF _{ma} R	_	Non contaminant- Specific Parameters	2.03E-01 2.03E-01 5.19E-07	20.05.5 20.05.7 20.05.	1,1-Dichlaroethane	Total 1,2 Dichiaroethene	1.2.4 Trichlorobergene	9 105-02 6.825-07	1 2-Dicharopropane	1 3-Dichloroberzene	3'01E-02 5'00E-02 11.1-Dichloroberrasne	00-9000 20-340 L	2.4-Diritto toluene	2.6-Diritolokene	2-Chlorophero	3 3-Dicharobenziane	4,6-Diratto-2-Methyl Phenol	\$101-550 2-4.00E-01 2.53E-06	40
			Average intake from inhalation non-carcinogens inhalation Reference Dase Hazard Quotient Total Hazard Index	RfD _m RfQ HQ	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		2.98317E-05	4 97593E-05	0.00393525	0 003534444	0 019499047 1 145-03 17 10442682	8.74557E-05 1 40E-03 0.062468384	1 14E-03	0.014173216	0 015987156 2.30E-01 0.069509375	0	0	0	0 001142492	0	0	7.3781 9E-0 5	
Surface Water	Creek	incidental ingestion of creek water	POE concentration POE concentration Water Ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT ₀ ATn ₀	ug/i mg/m3 i/d d/y y kg d	0 05 \$2 6 15 25.550 2,190	3.87145E-05 3.87145E-05				0.003415705 0.003415705								0.001482685 0.001482685		7.99002E-05 7.99002E-05	4.276E-07 4 276E-07	
			Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction		1 57586E-12 2.00E-01 3.15E-13	5 9803E-12 5 706-02 3.41E-13	2.07879E-10	6.85807E-09	1.39035E-10	1 05108E-11 9 10E-02 9.56E-13	6.80E-02	1 128495-08	1.35446E-08 2 40E-02 3 25E-10	1 10E-02	4.29494E-11 6.80E-01 2 92E-11	6.70E+00		5 06286E-12 4 50E-01 2.28E-12	3.25236-12	1.74052E-14 4.00E-01 6.96E-15	4
			Average Intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6 00E-02	6 97701E-11 4 00E-03 1 74425E-08	1 00E-01	1 00E-02	1 006-02	1,22626E-10 2,00E-02 6,13131E-09	1 10E-03	3.00E-02		1.00E-04	2.00E-03	1.005-03	5.00E-03	5.90667E-11	1.00E-04	2.03061E-13 7 00E-05 2.90087E-09	1.1
		Dermal contact with creek water	POE concentration event duration obsorbed dose per event Event frequency Exposure auration Exposure frequency Sidn surface area Body weight Averaging time non-carcinogens	C., tevent Doewen EV ED EF SA BW AT ATn,		2 1 6 52 6 600 1 15 25,550 2,190					0.003415705 9.32615E-10								0,001482685 3.66143E-11		7.99002E-05 1.13569E-12		2.4
			Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{der} R R ₁	mg/kg-d kg-d/mg fraction fraction		5.44227E-12 2.00E-01 1.09E-12	5 70E-02	5.06038E-10	1.89193E-08	5.01093E-09	1.598725-11 9 10E-02 1 45E-12		2. 899 68E-07	2.52537E-07 2.40E-02 6.06E-09	6.8542E-11 1 10E-02 7 54E-13		6.70E+00		5.59672E-11 4 50E-01 2.52E-11	6.102065-12	0 4.006-01 0.006+00	
			Absorbed class for non-carcinogens Dermal Reference Dase Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	<u>.</u>	6 34932E-11 6 00E-02 1.05822E-09	1.88018E-10 4 00E-03 4 70044E-08	1 00E-01	1 00E-02		2.00E-02	1 10E-03	3 38296E-06 3.00E-02 0 000112765	3.00E-02	7 99656E-10 1.00E-04 7.99656E-06	8.481925-10 2.00E-03 4.24096E-07	1 00E-03	2.29516E-09 5.00E-03 4.59033E-07	6.52951E-10	7 11907E-11 1.00E-04 7.11907E-07	7:00E-05 0	93
		Carcinogenic risk - all routes (detecte Carcinogenic risk - all routes (undete TOTAL CARCINOGENIC RISK - ALL ROI	cled organics) UTES	Sum Rt	fraction		6 33E-07	2.96E-07	0.00E+00	0 00E+00	0 00E+00	8 25E-07	5 92E-08	0 00E+00	4 09E-05	2.02E-08	4 42E-06	9 77E-06	0 00E+00	1 026-06	0 00E+00	3 03E-06	
		Non-Carcinogenic risk - all routes (de Non-Carcinogenic risk - all routes (un TOTAL NON-CARCINOGENIC HAZARD	detected organics)	Sum HI	fraction	<u>-</u>	0 000110697	0 002692128	0 00841963	0 076361895	17 9866156	0 063466717	0 050302792	0 177305719	0 243625516	0 214447013	0 037575024	0.017004619	0 050281315		0 1302624	0.209132423	

Notes:

1- ug/l = micrograms per Liller

2- ug/m3 = micrograms per cubic meter

3- hyd = hours per day

4- l/d = Ries per day

5- d/y = days per year

5- d/y = days per year
6- y = year
7- kg = klagram
8- d = day
9- hz = hour
10- mg/kg-d = milligrams per klagram per day
11- kg-d/mg = klagrams per day per milligram
12- cm2 = square centimeter
13- m3/hr = cubic meter per hour
14- mg/m3 = milligrams per cubic meter
15- mg/cm2-event = milligrams per square centimeter per event
16- mg/cm3-event = milligrams per cubic centimeter per event

TABLE 7-24
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL D)
MISSOURI ELECTRIC WORKS

																d	emicals of Pot	ential Concer	n						
Exposure Route	Parameter	Symbol CSF ₁₀	Units kg-d/mg	Aroctor-1232	A 006-1242	Aroctor-1248	752-155 Vacobe-155	Arocker-1260 (Filtered)	2,73E-02	3.085.0] authracene	augud (o karangan ang ang ang ang ang ang ang ang an	Serzo(b)fluorconfhene	Berzo(k) fluoranihene	00-131 1 (2-Choroeffy) Ether	bs(2-Chéorosopropyl) Ether	Bs (2-ethyfhexyl phthadate)	Bromodichioromethane	SS Carbon Temachlande	Chloroberizene	Charodipromomethane	8 10E-02	3.08E-01	Dibergahran	2 Vice of the vacchiore - 3-Butadiene	! 161
	Inhalation Cancer Slope Factor Risk	R	fraction	0.0000	1.01E-06	0.00E+00	1.11E-06	4.55E-05	5.71E-05	0.00E+00	0 00E+00	7.84E-06	0.005+00					1 196-07			2.726-05	0.005+00		1 45E-06	
	Total carcinogenic risk for exposure route	R,	fraction																						
	Average intake from inhalation non-carchogens inhalation Reference Dose Hazard Quotient Total Hazard Index	l, RfD _m , HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.95128E-05	D	3.24646-05	0 001328075	0.024399584 8 57E-03 2.847092598	0	0	0:00029712	0	0.001809429	0		0 000753929	2.66581E-05	0 934736351 1 706-02 54 98449122	6.182 22E-0 5	0.00392043	0	0.00024348	0 00021987	0.000
cidental ingestion of creek water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C, C, IR EF ED BW AI, Ain,	ug/I mg/m3 Vd d/y y kg d		1 71027E-07 1.71027E-07	1.11168E-07 1.11168E-07	1.8813E-07 1.8813E-07		0.003648704 0.003648704						0 000774668 0.000774668		0.002226 0.002226	3.4596E-05 3.4596E-05			0 011575497 0.011575497				
	Average intake from ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction traction	1 21827E-14 4.00E-01 4 87E-15	4.00E-01	4.52502E-15 4.00E-01 1.81E-15	7.65772E-15 4 00E-01 3.06E-15	3.13275-13 4.005-01 1.255-13	1 48519E-10 5.50E-02 8 17E-12	4.94271E-14 7.30E-01 3.61E-14	4 59463E-14 7 30E+00 3.35E-13	3 71993E-16 7.30E-01 2.72E-16	2.14317E-16 7 30E-02 1 56E-17	1 10E+00	3 153256-11	8.35388E-12 1 40E-02 1 17E-13	9.06082E-11 6.20E-02 5.62E-12	1.40821E-12 1.30E-01 1.83E-13	5.53403E-08	7.43006E-12 8.40E-02 6.24E-13		1.99009E-16 7.30E+00 1 45E-15		5.18637E-14 7 80E-02 4 05E-15	1
	Average intake from ingestion non-carcinogens ingestion Reference Dase Hazzard Quotient Total Hazzard Index	L RfD。 HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 42132E-13	8 12183E-14	5.27919E-14	8.93401E-14 2.00E-05 4.467E-09	3.65482E-12	1.73272E-09 4 00E-03 4.33179E-07	5.7665E-13	5.36041E-13	4,33992E-15	2.50037E-15	2.53716-09	3.67879E-10 4.00E-02 9.19697E-09		1.0571E-09 2.00E-02 5.28548E-08	1 64291E-11 7.00E-04 2.34702E-08	6.45637E-07 2.00E-02 3.22819E-05	2.00E-02		2.321776-15	4.00E-03	6.05076E-13 2.00E-04 3.02538E-09	
rmal contact with creek water	POE concentration	C.	ug/l	2.99297E-07	1.710276-07	1.111686-07	1.88135-07	7.69621E-06	0.003648704	1 21429E-06	1 12878E-06	9 13887E-09	5.26519E-09	0.005342537	0 000774668	0 000205232	0.002226	3.4596E-05	1.35956262	0.000182537	0.011575497	4.889115-09	1 41097E-06	1 274155-06	4 00
	event duration absorbed dose per event Event frequency Exposure frequency Skin surface area Body weight Averaging time non-carcinogens	tevent Dasever EV ED EF SA BW AT ATn _a		1.80907E-13	7 91158E-13	5.51653E-13	1.48195E-12	3.786175-10	1.36534E-10	3.17844E-12	5.06557E-12	4.16175E-14	2.36346E-14	3.17633E-11	1.55078E-10	6.52686E-11	3.77871E-11	1 99165E-12	1 077525-07	2.8797E-12	2.34503E-10	3 40744E-14	5.24028E-13	6.38038E-13	3.86
	Absorbed dose for carcinogens Dermal Cancer Stope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{der} R R ₁	mg/kg-d kg-d/mg fraction fraction	9 720145-13 4 005-01 3.895-13	4 00E-01	4 00E-01	7.96249E-12 4.00E-01 3.18E-12	2.03431E-09 4.00E-01 8.14E-10	5.50E-02	1.70778E-11 2.35E-01 4 01E-12	2.72173E-11 2.35E+00 6.40E-11	2 236115-13 2.305-02 5.145-15	7.30E-02	1 10E+00	8.33234E-10	3.50688E-10 1 40E-02 4.91E-12	2.0303E-10 6 20E-02 1.26E-11	1 07011E-11 1.306-01 1.39E-12	5.78949E-07	1.54726E-11 8.40E-02 1.30E-12		1 83082E-13 7,30E+00 1,34E-12	2.8156E-12	3 42817E-12 7 80E-02 2.67E-13	1
	Absorbed dase for non-carchagens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.134025-11	4 95937E-11	3 45803E-11	9.28958E-11 2.00E-05 4.64479E-06	2.37336E-08	8.55864E-09 4 00E-03 2.13966E-06	1 9924E-10	3 175355-10	2.60879E-12	1 48154E-12	1 991085-09	9.72106E-09 4 00E-02 2.43026E-07	3.80E-03	2.36868E-09 2.00E-02 1 18434E-07	1 24846E-10 7.00E-04 1 78352E-07	6.20E-03	2.00E-02	2.005-03	2.135955-12	4 00E-03	3 99954E-11 2.005-04 1 99977E-07	8
cinogenic risk - all routes (detecte cinogenic risk - all routes (undetec AL CARCINOGENIC RISK - ALL ROL	cted organics)	Sum Rt	fraction	1 345-06	5 55E-06	3 155-06	9 455-06	2.135-03	8 34E-05	1 28E-05	1 87E-04	1 40E-05	4 66E-06	2.15E-04	0 00E+00	2.09E-05	8 58E-07	1 93E-07	0 00E+00	9 48E-08	2.73E-05	6 625-04	0 00€+00	2.42E-06	6
n-Carcinogenic risk - all routes (dei n-Carcinogenic risk - all routes (unk TAL NON-CARCINOGENIC HAZARO	detected organics)	Sum HI	fraction	0	0	0	12.16192855	0	4.243419059	0	0	0	0	0	0 002517535	3 09585243	0 008072162	0 009537899	74 7111965	0 000658484	0 111956852	0	0 033010719	0 727879063	0 298

TABLE 7-24
RME RISK CALCULATIONS FOR CHILD RESIDENT (MODERATE TCE SLOPE FACTOR, WELL D)
MISSOURI ELECTRIC WORKS

									Ch	emicals of Pol	ential Concer	1		
Екромите Route	Parameter	Symbol	Umits	ndeno[1,2,3-cd]Pyrene	-meltrytogothalene	Apphilhalene	litoberzene	dirosod-n-propykanine	entachtarophenal	efrachlarefhere	rictionoethene	'Inyl Chloride	ota	:
	Inhalation Cancer Slope Factor	CSF _{bh}	kg-d/mg	3 08E-01						2.10E+00	2.00E-02	3 00E-02		
	Risk	R	traction	0.00E+00						3.13E-04	8.425-06	2.83E-07	1	
	Total carcinogenic risk for exposure route	R,	fraction									[7470	17
	Average intake from inhalation non-carcinogens	L,	mg/kg-d	0	9 140586-05	0 001104409	0.000119327	0	٥	0.001736614	0.004913425	0 0001 10074	1	
	Inholation Reference Dose	RfDm	mg/kg-d			8 57E-04	5 71E-04	•	•	1 406-01	1.14E-02	2.86E-02	1	
	Hazard Quofient	HQ	mg/kg-d				0.208978893				0.431002163			
	Total Hazard Index	HI	mg/kg-d									[7.712-01	62
and and the second area of a second assessment	DOE accompanies	C.	ug/l	5.26519E-09	0.0001184	0.001499949	0.000154050	A 007217476	7 720/26 0/	0.000041114	0.029336582	0.00000250014		
ncidental ingestion of creek water	POE concentration	<u>ر</u>	mg/m3	5.26519E-09		0 001433262					0.029336582		- 1	
	Water ingestion rate	IR	l/d	J.200171-07	0.0001100	0 001-00202	0.000104038	V.JU/ 2 12423	, /3U-2E-00		0.027330302	0.000323004	i	
	Exposure frequency	Ē	d/y										ı	
	Exposure duration	ED	ω, γ										- 1	
	Body weight	BW	kg .										- 1	
	Averaging time carcinogens	AT.	d										- 1	
	Averaging time non-carcinogens	ATn _e	d										- 1	
	Average intake from Ingestion carcinogens	L	mg/kg-d	2.14317F-16	4 82755F-12	5 834025-11	4 30342F-12	2.93578E-10	3 144435-13	3.42372E-11	1.19413E-09	1,322915-11	i i	
	Ingestion Cancer Slope Factor	ČSF.	kg-d/mg	7 30E-01	7.02/ 502-12	300-021-11	0.000-12L-12	7 00E+00	1.206-01	5 40E-01	2.006-02	7 205-01		
	Risk	R	traction	1.56E-16				2.06E-09	3 7BE-14	1.85E-11	2,39E-11	9.525-12		
	Total carcinogenic risk for exposure route	R,	fraction						• / • • • • • • • • • • • • • • • • • •				" E.ES-OF	
				0.00000	£ (001EE 11		****		0 (31035.10	0.00/5/5 10	1 0001 55 00			
	Average intake from Ingestion non-carcinogens	l₀ RfD₀	mg/kg-d	2 3003/6-15	5.63215E-11 4 00E-03	6.80636E-10 2.00E-02	7,354E-11 5 00E-04	3.42508E-09	3.67107E-12 3.00E-02	3.99434E-10 1 00E-02	1.39315E-08 3.00E-04	1 5434E-10 3.00E-03	- 1	
	Ingestion Reference Dose	HQ	mg/kg-d											
	Hazard Quotient Total Hazard Index	HI	mg/kg-d mg/kg-d		(AUGUAC-UG	3 40318E-08	1.47002-07		1.223076-10	3.99434E-08	4 043040-03	5.14467E-08	0.905-00	(
Dermal contact with creek water	POE concentration	C.	ug/l	5.26519E-09	0.0001186	0.001433262	0 000154858	0.007212425	7.73042E-06	0.000841116	0 029336582	0.000325004	- 1	
	event duration	tevent	hr	4 (00 (05))	_								- 1	
	absorbed dose per event	Daevent EV	mg/cm2-ever events/day	2.49869E-14	0	2.003335-10	2.526/56-12	5.2/9125-11] 93543E- 11	1.046332-10	1 06659E-09	4 460B3E-12	- 1	
	Event frequency Exposure duration	ED ED	Y											
	Exposure frequency	E	d/v											
	Skin surface area	ŠĀ	cm2										l l	
	Body weight	BW	kg										•	
	Averaging time	AT	ďγ										- 1	
	Averaging time non-carcinogens	Aīn _o	ď											
	Absorbed close for carcinogens	DAD	mg/kg-d	1 34255E-13		1.07639E-09	1 257/25 11	2.83647E-10	1.03991E-10	5 62195E-10	5 73079E-09	2.3968E-11		
	Dermai Cancer Stope Factor	CSF.	kg-d/mg	2.30E-01	U	12/03/207	1.33/022-11	1 80E+00	1,206-01	5 40E-01	3 00E-03	7 20E-01	- 1	
	Risk	e e	fraction	3.09E-14				5 11E-10	1.25E-11	3 04E-10		1.73E-11	ı	
	Total carcinogenic risk for exposure route	R,	fraction	-U11-14				D 11E-10	1.2.32.11	5 V-K-10	1 /41-11	1./91-11	8.186-09	1
	•											·		
	Absorbed dose for non-carcinogens	DAD _{no} RfD _{der}	mg/kg-d	1 5663E-12				3.309215-09	1.21322E-09	6 55894E-09		2.79627E-10		
	Dermat Reference Dose		mg/kg-d		4 00E-03	2 005-02			3.00E-02	1 00E-02	4,50E-05	3.00E-03	- 1	
	Hazard Quotient Total Hazard Index	HI HQ	mg/kg-d mg/kg-d		0	6.2/074E-U/	3 16778E-07		4.04408E-08	6 55894E-Q7	0.001485759	9 32069E-08	2.845-03	
								-						
rcinogenic risk - all routes (detecte rcinogenic risk - all routes (undete													3.16E-03 1 03E-03	
TAL CARCINOGENIC RISK - ALL ROL		Sum Rt	fraction	1 70E-05	0 00E+00	0 00E+00	0 00E+00	2.93E-04	3 45E-05	3 386-04	1 025-05	1 71E-06	4.201-03	
n-Carcinogenic risk - all routes (de	tected organics)												1 09E+02	
n-Carcinogenic risk - all routes (un					A 44 15 4 15 15 15 15 15 15 15 15 15 15 15 15 15				4 (118/05-17	A A -7891 12 1	7 189574261	A 4 1 (10 / 10 / 10 / 10 / 10 / 10 / 10 / 1	1 41E+01	
TAL NON-CARCINOGENIC HAZARD	DINDEX - ALL ROUTES	Sum HI	fraction	n	0.00145740722	1 306814953	11 7507177777	n	A [Begrettin	11 1144471494		111111111111111111111111111111111111111	1.24E+02	

TABLE 7-25
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL D)
Missouri Electric Works, Cape Givardedus

			 													Chemicals	of Potential Co	oncem						
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbol	Units	Non Contaminant- Specific Parameters	1,1,22-Tetrachloroethane	1.1.2-Trichlaroethane	1 -Dichloroethane	Total 1,2 Dichlaroethene	1 2.4 Trichlorobenzene	1,2-Dichlaroeithane	1 2-Dichloroproporte	1,3-Dichlorobenzene	1.4-Dichlorobenzane	2 4.6-Trichlorophenol	2.4-Diritrotokuene	2.6-Diritrototuene	2-Chlorophenol	3 - Dichlorobenzicine	4.6-Dinitro-2-Methyl Phenol	Arockor-1016	
					· · · · · · · ·	-																		
Groundwater	Alr	Indoor alf	Vapour intrusion - inhalation	POE concentration POE concentration Inhidation rate Exposure time Exposure imagency Exposure duration Body weight Averaging time concludgers Averaging time non-carcinogers	Com Com IR ET ED BW ATo ATO	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25,550 2,190	7.595-06 7 595-09	9,306-05 9,306-08	2.27E-03 2.27E-06	7.426-03 7.426-06	4.09E-03 4.09E-06	1 925-04 1.925-07	1 06E-04 1.06E-07	8.90E-03 8.90E-06	6.16E-03 6.16E-06	0 00E+00 0 00E+00	0.49E+00 0 00E+00	0.00E+00 0.00E+00	3.06E-04 3.06E-07	0.00+900 0.00+900	0.00E+00 0.00E+00	6.76E-08 6.76E-11	
				Average infake from Inhalation carcinogens Inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l _e CSF _{IN} R R,	mg/kg-d kg-d/mg fraction fraction		4.192185-10 2.035-01 8.515-11	5.13666E-09 5.70E-02 2.93E-10	1.253795-07	4.098286-07	2.25902E-07	1.06047E-08 9.10E-02 9 65E-10	5.85468E-09	4.915736-07	3 40235E-07 2.20E-02 7.49E-09	0 1 09E-02 0 00E+00	0	0	1.69013E-08	0	0	3.73374E-12 4.00E-01 1.49E-12	4.00E-0
				Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	L RfD _m HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		4.890875-09	5 99277E-08	1.462755-06		1 145-03		1 14E-03	5 73501E-06	3.9694E-06 2.30E-01 1.72583E-05	0	D	0	1.971816-07	0	0	4.35603E-11	
	Groundwater	Top Water	ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure trequency Exposure duration Body weight Averaging time carchagens Averaging time non-carchagens	Cw Cw IR EF ED BW AT _o ATn _a	ug/l mg/m3 I/d d/y y kg d d	1 350 6 15 25,550 2,190	0.09259 0.09259	0 15444 0 15444	12.214 12.214	10.97 10.97	60 52 60.52		0 14508 0 14508	43.99 43.99	49 62 49 <u>6</u> 2	0.19306 0 19306	1 10916 1.10916	0.266 0.266	3.546 3 546	0 29747 0 29747	0.19109 0.19109	0.229 0.229	
				Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for expasure route	L CSF _o R R _i	mg/kg-d kg-d/mg fraction fraction		5.07342E-07 2.00E-01 1.01E-07	8.46247E-07 5 70E-02 4.82E-08	6.6926E-05	6.01096E-05	0.000331616	1 48734E-06 9 10E-02 1.35E-07	7.94959E-07 6.80E-02 5.41E-08	0.000241041	0 00027189 2.40E-02 6.53E-06	1.05786E-06 1 10E-02 1.16E-08	6.07759E-06 6.80E-01 4 13E-06	1.45753E-06 6 70E+00 9.77E-06	1 94301E-05	1 62997E-06 4.50E-01 7.33E-07	1.04707E-06	1.25479E-06 4.00E-01 5.02E-07	4.00E-
	· · · · · · · · · · · · · · · · · · ·			Average intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	l, RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	···	6.00E-02	4 00E-03	0 000780804 1 00E-01 0.007808037	1.00E-02	1.00E-02	2.005-02	9.27452E-06 1 10E-03 0.008431382	3 00E-02	3 00E-02	1 00E-04	7.09052E-05 2 00E-03 0 035452603	1 00E-03	5.00E-03	1.90163E-05	1.22158E-05 1 00E-04 0 122157991	1 46393E-05 7 00E-05 0.20913242	
			Dermal contact with tap water	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skih surface area Body weight Averaging fine Averaging fine non-carcinogens	C _w tevent Doever EV ED EF SA BW AT ATn _e	ug/i hr the mg/cm2-events/day y d/y cm2 kg d/y d	1 6 350 6,600 15 25,550 2,190	0.09259 1 71293E-09	0.15444 2.12216E-09	12.214 1 44936E-07	10 97 1.47042E-07	60 52 1.16844E-05		0.14508 2.10687E-09	43.99 6 93365E-06	49.62 4.85357E-06	0 19306 2.15732E-08	1 10916 1.00576E-08	0.266 0	3.546 5.85864E-08	0.29747 1.76154E-08	0.19109 1 92059E-09	0.229	0.132 5 67678E-
				Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{ober} R R _t	mg/kg-d kg-d/mg fraction fraction		6 19469E-08 2.00E-01 1.24E-08	5.70E-02	5.24152E-06	5.31769E-06	0.000422559	7.25641E-08 9 10E-02 6.60E-09	7.61936E-08 6.80E-02 5.18E-09	0 000214587	0.000175526 2.40E-02 4.21E-06	7.80182E-07 1 105-02 8.58E-09		0 6.70E+00 0.00E+00	2.118745-06	6.37049E-07 4 50E-01 2.87E-07	6.9457E-08	0 4 00E-01 0.00E+00	
				Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	-	6.00E-02	8 95378E-07 4 00E-03 0.000223845	1 005-01	6.20397E-0.5 1.00E-02 0.006203967	1.00E-02	2.005-02	1 106-03	3.00E-02	3 00E-02	9.10213E-06 1 00E-04 0.091021282	2.00E-03	1 00E-03	2.47186E-05 5.00E-03 0.004943729	7.43224E-06	8.10332E-07 1 00E-04 0 008103318	0 7 006-05 0	2 39513E4
y calculated fo	Air	Indoor Air 's Law > 1e-5 atm m3/	Vapors from tap water imol, those with a 'Y')	Concentration in tap water Concentration in tap water Volatilization factor POE concentration Inhibitation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens	C. VF C. Kop RET EF ED BW AT.	ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d	0.42 24 350 6 15 25,550		0.15444 0.15444 9.00007722	12.214 12.214 Y 0.006107	10.97 10.97 10.97 9 0.005485	60.52 60.52 9 0.03026	0 27144 y	0.14508 0.14508 7 0.00007254	43.99 43.99 7 0.021995	49 62 49.62 7 0.02481	0 19306 0.19306 0	1 10916 1,10916 0	0.266 0.266 V	3.546 3.546 7 0.001773	0 29747 0 29747 0	0.19109 0.19109 0.19109	0 229 0 229 9 0.0001145	0.132
				Averaging time non-carcinogens Average intake from inhalation carcinogens	Aīn _o	d mg/kg-d	2.190	2.55701E-06	4 265088-06	0 000337307	0 000302952	0 001671347	7.496215-06	4.006595-06	0 001214847	0 001370328	0	0	0	9 79279E-05	0	o	6 32416E-06	

TABLE 7-25 RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL D) Missouri Electric Works, Cape Girardoau

	_ <u></u>																	 							
															5	Cr To	nemicals of Po	tential Concer	m .						
Exposure Route	Parameter	Symbol	l boile	.rockor-1232	vocior-1242	voctor-1248	.rockor-1254	voctor-1260 (Filtered)	enzene	erzo(a) anthracene	eusu/d jojozue	erzo(b)fluoranthene	erzo(k)fluoranthene	is[2-Chloroelthyl] Ether	k(2-Chloroleopropyl) Effi	is (2-ethylhexyl phithodole	romodictvoramethane	cation Tetrachloride	Thorobergane	thorodipromomethane	hloroform	iberzo(a.h)Anttracene	Denzofuan	exachloro-1.3-Butadlene	
Exposure Koole	TOGTOR	371100	0.10						. 4								<u> </u>			0		 ₽	<u>A</u> _	Ā	
Vapour Intrusion - inhalation	POE concentration POE concentration Inhalation rate Exposure firme Exposure frequency Exposure duration Body weight Averaging time concluders Averaging time non-carcinogens	Costa Costa IR ET EF ED BW AT _C	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0 00E+00 0 00E+00	3.485-08 3.485-11	0.00E+00 0.00E+00	5 005-06 5 006-11	2 08E-06 2 08E-09		0.00E+00 0.00E+00	0 00E+00 0 00E+00	5.21E-08 5.21E-11	0.00E+00 0.00E+00	4 115-04 4 116-07	0 00E+00 0.00E+00	0.00E+00 0.00E+00	1.20E-03 1.20E-04	3.04E-08		9.87E-05 9.87E-08	1.13E-02 1.13E-05			7.48E-07 7.48E-10	1.2
	Average Intake from inhalation carcinogens Inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _{Inh} R R ₁	mg/kg-d kg-d/mg fraction fraction	0 4.005-01 0.005+00	1 9221E-12 4.00E-01 7.69E-13	4.00E-01	2.76164E-12 4.00E-01 1 10E-12	4.00E-01	2.73E-02	0 3.08E-01 0.00E+00	0 3 08E+00 0.00E+00	2.87763E-12 3.08E-01 8.86E-13	0 3 08E-01 0.00E+00	2.27007E-08 1.16E+00 2.63E-08	0	0	6.62795E-08	1 67908E-09 5.20E-02 8.73E-11	8.3954E-05	5.45148E-09	6.24132E-07 8.10E-02 5.06E-08	3.08E-01	1.79 <i>5</i> 07E-08	4.131425-11 7.705-02 3.185-12	16
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard index	RfD _{trib} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.24245E-11	0	3.221925-11	1.34032E-09	1 39831E-06 8 57E-03 9.000163164	0	0	3.357246-11	0	2.64842E-07	0	0	7.7326E-07	1.95893E-08	0.000979463 1 70E-02 0.057615471	8.36007E-08	7.28153E-06		2.09425E-07	4.81999E-10	7.732
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw Cw IR EF ED BW ATa ATn _b	ug/l mg/m3 l/d d/y y kg d d	9 1603 0 1603	0.0916 0.0916	0 05954 0.05954	0.10076 0.10076	4 122 4.122		0.65036 0 65036	0 60456 0 60456	0.922185 0 922185	0.5313 0.5313	5.616 5.616	0 81432 0.81432	109.92 109.92	234 234	0.08274 0 08274	2901 18 2901 18	0.19188 0.19188	12.1 <i>6</i> 8 12.168	0 49335 0.49335	0 7557 0 7557	0.68242 0 68242	0. 0
	Average Intake from ingestion carcinogens Ingestion Cancer Stope Factor Risk Total carcinogenic risk for exposure route	i, CSF, R R,	mg/kg-d kg-d/mg fraction fraction	8 78356E-07 4 00E-01 3.51E-07	5 01918E-07 4 00E-01 2.01E-07	4 00E-01	5.5211E-07 4 00E-01 2.21E-07	2.25863E-05 4 00E-01 9.03E-06	0.000414959 5.50E-02 2.28E-05	3.56362E-06 7.30E-01 2.60E-06	3.31266E-06 7 30E+00 2.42E-05	5.05307E-06 7.30E-01 3.69E-06	2.91123E-06 7 30E-02 2.13E-07	3.07726E-05 1 10E+00 3.38E-05	4 46203E-06	0 000602301 1 40E-02 8 43E-06	1.28219E-05 6.20E-02 7.95E-07	4 5337E-07 1.30E-01 5.89E-08	0.015896877	1 0514E-06 8 40E-02 8.83E-08	6.6674E-05	2.70329E-06 7.30E+00 1.97E-05	4.14082E-06	3.73929E-06 7 80E-02 2.92E-07	
	Average Intake from Ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	L RfD。 HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.024755-05	5 85571E-06	3 806215-06	6 44128E-06 2.00E-05 0 322063927	0 000263507	0.004841187 4.00E-03 1.210296804	4.15755E-05	3.86477E-05	5.B9\$25E-05	3.39644E-05	0.000359014	4 00E-02	0 007026849 2.00E-02 0 351342466	0 000149589 2 00E-02 0.007479452	7 005-04	0.185463562 2.00E-02 9.273178082	2.00E-02	1 00E-02		4.83094E-05 4 00E-03 0 012077397	4.3625E-05 2.00E-04 0.218125114	8.
Dermal contact with tap water	POE concentration	C,	ug/l	0 1603	0 0916	0 05954	0.10076	4.122	75.73	0 65036	0 60456	0.922185	0.5313	5 616	0 81432	109.92	2.34	0 08274	2901.18	0.19188	12.168	0.49335	0 7557	0 68242	0
	event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	tevent Doewe EV ED EF SA BW AT ATn _o		6 85129E-08	2 99626E-07	2.089215-07	5.61245-07	0 000143389	1.762 09E-06	1.203736-06	1,91842E-06	2.96952E-06	1 6864E-06	2.266855-08	1.15275-07	2.47184E-05	2.80879E-08	3.28754E-09	0.000152749	2.14049E-09	1.61946-07	2 4313E-06	1 98459E-07	2.416375-07	4.625
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{der} R R ₁	mg/kg-d kg-d/mg fraction fraction	2.47773E-06 4.00E-01 9.91E-07	1.08358E-05 4 00E-01 4 33E-06		2.02969E-05 4 00E-01 8 12E-06	0.00518558 4.00£-01 2.07E-03	-	4.35323E-05 2.35E-01 1.02E-05	6.93786E-05 2.35E+00 1 63E-04		6 098756-05 7 306-02 4 456-06	8.197946-07 1 10E+00 9.026-07	4 16866E-06	0.000893926 1 408-02 1 258-05	6 20E-02	1 189925-07 1 305-01 1.55E-08		7.74093E-08 8 40E-02 6.50E-09	5.85645E-06	8 79266E-05 7.30E+00 6.42E-04		8 73864E-06 7.80E-02 6.82E-07	
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quoffent Total Hazard Index	DAD _{so} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	2.890688-05	0.000126418	8.81475E-05	0 000236797 2.008-05 11.83985998	0.060498432	0.000743456 4.00E-03 0 185863921	0 000507877	0 000809417	0.001252895	0.00071152	9.56426E-06	4 00E-02		2.00E-02	7 00E-04		2.006-02	6.83253E-05 2.00E-03 0.034162651	0.00102581	8.37333E-05 4 00E-03 0 020933313	0 000101951 2.00E-04 0.509753746	8.0
Vapors from tap water	Concentration in top water Concentration in top water Volatization factor	C., C., ∀F	ug/l mg/m3 dimensioniess	0 1603 0 1603	0.0916 0.0916 y		0 10076 0 10076	4 122 4 122 y		0 65036 0 65036	0 60456 0 60456		0.5313 0.5313	5.616 5.616		109.92 109 92	2.34 2.34 y	0 08274 0.08274 y		0 19188 0 19188	12.168 12.168			0 68242 0 68242 v	
thase with a VI	POE concentration inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Co-leap IR ET ED BW AT _o ATn _o	mg/m3 m3/hr h/d d/y y kg d	0	0.0000458	o [·]	0.00005038	0 002061	0.037845	0	o	0.0004&1093	0	0.002608	0	0	0.00117	0.00004137	1 45059	0.00009594	0.004084	o	0.00037785	0 00034121	0.000
	Average intake from inhalation carcinogens	l _o	mg/kg-d	0	2.52967E-06	0	2.78263E-06	0 000113835	0.002091393	0	0	2.54675E-05	0	0 000155094	0	0	6.46225E-05	2.28498E-06	0.080120259	5.29904E-06	0.000336037	0	2.08697E-05	1.8846E-05	1.8719

TABLE 7-25
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL D)
Missouri Bectric Works, Cape Girardoau

									G.	emicals of Pot	anna concan		į	
Exposure Route	Parameter	Symbol	Units	indeno(1,2,3-cd)Pyrene	2-methythapthalene	Naphthalene	Nitrobenzene	Nihosod-n-propytamine	Pentachlorophenol	Tetrochloroeithene	Inchioroeithene	Vinyl Chloride	Total	
Vapour intrusion - inhalation	PQE concentration	Con	ug/m3	0.00€+00	2.19E-05	2.75E-04	6.87E-06	0.00E+00	0.006+00	1.316-03	2.50E-02	9 36E-04		_
Vapour mireson - renordion	POE concentration	C**	mg/m3	0.00E+00	2.195-08	2.75E-07	6.87E-Q9	0.00E+00	0 00E+00	1.315-06	2.505-05	9.36E-07	l	
	Inhalation rate	R	m3/hr											
	Exposure fime	ET	h/d											
	Exposure frequency Exposure duration	EF ED	d/y y											
	Body weight	BW	ka											
	Averaging time carcinogens	AT _o	ď										i	
	Averaging time non-carcinogens	ATn _o	d										1	
	Average behavior from Inherication asserbnouses		ma/ka.d	0	1 200/5 00	1 51005 00	2 70465 10		^	7.235516-08	1 200025 07	£ 1/005 00		
	Average intake from inhalation carcinogens Inhalation Cancer Slope Factor	CSF ₈₈₆	mg/kg-d kg-d/mg	3.08E-01	1.20965-09	1.5189E-08	3 7945E-10	0	V	2.10E+00	1 38082E-06 6.00E-03	5 1698E-08 3 00E-02		
	Risk	R	fraction	0.00E+00						1.52E-07	8.28E-09	1 55E-09		
	Total carcinogenic risk for exposure route	R,	fraction										2.515-07	
	Average intake from inhalation non-carcinogens	4	mg/kg-d	0	1.41126-08	1.77205E-07	4 426925-09	0	0	8.441426-07	1 61096E-05	6.03143E-07		
	Inhaidion Reference Dose	RfD	mg/kg-d	•		8 57E-04	5.71E-04	•	•	3.40E-01	1 14E-02	2.86E-02	1	
	Hazard Quoflent	HQ	mg/kg-d			0 000206774	7.75292E-06			6.02959E-06	0.001413122	2.10889E-05		
	Total Hazard Index	н	mg/kg-d									£	6198-02	
ingestion of top water	POE concentration	C,,	ug/l	0.5313	0.2837	3.4278	0.37036	7.5816	4 14032	5.39	15.25	0 34164		
ingestion of paperson	POE concentration	Ĉ.	mg/m3	0.5313	D.2837	3.4278	0.37036	7.5816	4 14032	5.39	15 25	0.34164		
	Water Ingestion rate	IR	I/d											
	Exposure frequency	뜐	d/y											
	Biposure duration Body weight	ED BW	y										i	
	Averaging time carcinogens	AT _o	kg d										1	
	Averaging time non-carcinogens	ATn _o	ď											
	Average intake from ingestion carcinogens	6	mg/kg-d	2.911235-06	1.55452E-06	1.87825E-05	2.020275.07	4.1543E-05	2.26867E-05	2.95342E-05	8 35616E-05	0.000001079		
	Ingestion Cancer Slope Factor	ČSF,	kg-d/mg	7 30E-01	1.334322-06	1.8/8256-05	ZJIZY3/E-U6	7.00E+00	1.20E-01	5.40E-01	6.006-03	7 20E-01		
	Risk	R	fraction	2.13E-06				291E-04	2.72E-06	1 59E-05	5.01E-07	1.35E-06	l l	
	Total carcinogenic risk for exposure route	R,	fraction								••••		4.498-04	
	Average Intake from ingestion non-carcinogens	L	mg/kg-d	3 39644E-05	1 81361E-05	0.000219129	2.34745-05	0.000484668	0 000264678	0.000344566	0.000974886	0.00002184		
	Ingestion Reference Dose	RfD _o	mg/kg-d		4.00E-03	2.00E-02	5.00E-04		3.00E-02	1.00E-02	3 00E-04	3 00E-03		
	Hazard Quatient	HQ	mg/kg-d		0 004534018	0.010956438	0 047351963		0.0088226	0.034456621	3.249619482	0.00728		
	Total Hazard Index	HI	mg/kg-d									£	1,612-01	
Dermal contact with tap water	POE concentration	C,,	ug/l	0.5313	0.2837	3 4278	0.37036	7.5816	4.14032	5 39	15.25	0 34164		
	event duration	tevent	hr										I	
	absorbed dose per event	Daeven		1 78289E-06	0	3.29882E-07	3.98612E-09	3.69993E-08	7.32983E-06	4 7412E-07	3 73936E-07	2 808656-09		
	Event frequency Exposure duration	EV ED	events/day Y											
	Exposure frequency	EF	d/y										1	
	Skin surface area	SA	cm2											
	Body weight Averaging time	BW AT	kg d/y											
	Averaging time Averaging time non-carcinogens	Λ! Aĭn₀	d/y d											
		DAD						1 0000/5 0/	0.000015000	1 714/05 05	. 0.0000 00	1 01 5705 07		
	Absorbed dose for carcinogens Dermal Cancer Slope Factor	DAD _e CSF _{der}	mg/kg-d kg-d/mg	6 4477E-05 2.30E-01	0	1.193E-05	1 44156E-07	1 33806E-06	0.000265079 1.20E-01	1.71463E-05 5 40E-01	1,35232E-05 9 00E-04	1.01573E-07 7 20E-01		
	Risk	R R	fraction	1.48E-05				2.416-06	3.18E-05	9.26E-06	1 225-08	7.31E-08		
	Total carcinogenic risk for exposure route	Ř,	traction									f	8.02E-03	
	Absorbed dose for non-carcinogens	DAD _{nc}	mg/kg-d	0.000752231	^	0 000139183	1.68181E-06	1.561075-05	0.003092585	0.00020004	0 00015777	1 18502E-06]	
	Dermal Reference Dose	RfD _{der}	mg/kg-d	0.000, 0220,	4 00E-03	2.00E-02	5 00E-04	1.00107200	3.00E-02	1.00E-02	4 50E-05	3.00E-03	1	
	Hazard Quoffent	HQ	mg/kg-d			0 006959146					3.506007297			
	Total Hazard Index	Ht	mg/kg-d										3.04E+01	
Vapors from tap water	Concentration in top water	C.,	ug/l	0.5313	0.2837	3.4278	0.37036	7 5816	4 14032	5.39	15.25	0.34164		
•	Concentration in top water	C.	mg/m3	0 5313	0.2837	3.4278	0.37036	7 5816	4 14032	5.39	15.25	0.34164	ļ	
	Volatilization factor	VF	dimensionless		у	y	y	_		y		y	1	
those with a "y")	POE concentration	Comp	mg/m3	0	0.00014185	0.0017139	0.00018518	0	0	0.002695	0.007625	0.00017082]	
	inhalation rate Exposure firme	ir et	m3/hr h/d										i	
	Exposure frequency	€	d/y										ļ	
	Exposure duration	E D	y ,										l	
	Body weight	BW	ko										J	
	Averaging time carcinogens	Aĭ _a Aĭn₀	d										1	
	Averaging time non-carcinogens	VIL.	d										- 1	
													1	

TABLE 7-25
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCE SLOPE FACTOR, WELL D)
Missouri Bectric Works, Cape Girardeau

1966 1966																	Chemicol	of Potential C	oncem						
Part Control	ource Medium	Exposure Medium	Exposure Point	Exposure Route	Inhalation Cancer Slope Factor		Units kg-d/mg	Contaminant- Specific			1,1-Dichlaroethane	Total 1.2 Dicharcettene	1,24 Trichlorobenzene		1,2-Dichlaropropame	1,3-Oichloroberzene			2.4-Dinitrotokuene	2.6-Diritrotoluene	2-Chlorophenol	3 3-Dichteroberzidine	4.6-Divitro-2-Methyl Phenol	4 00601 10 40060	4.00
Part Part					******	R,			•	2402-07				D.DAC-U/			0.011-00	U 00L-00						2.332-00	UJA
Part Consequentation Part P					Inhalation Reference Dase Hazard Quotient	HQ	mg/kg-d mg/kg-d		2.98317E-05	4 97593E-05	0 00393525	0 003534444	1 14E-03	1 40E-03	1 14E-03		2.30E-01	-	O	0	0.001142492	0	0	7 37819E-05	
Signature Cancer Rope Fooler Carp. Specific Spe		Surface Water	Creek	Incidental ingestion of creek water	POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens	C., IR EF ED BW AT ₆	ug/l mg/m3 l/d d/y y kg	52 6 15 25,550																	
Position Reference Doses Position Reference					Ingestion Cancer Slope Factor Risk	R	kg-d/mg fraction		2.00E-01	5.70E-02	2.07879E-10	6.85807E-09	1.39035E-10	9 10E-02	6.80E-02		2.40E-02	1 106-02	6 80E-01	6.70E+00	6 035198-11	4 50E-01	3.25238-12	1 74052E-14 4 00E-01 6.96E-15	1.009 4 4
event duration					Ingestion Reference Dase Hazard Quotient	HQ	mg/kg-d mg/kg-d		6.00E-02	4 00E-03	1 00E-01	1 00E-02	1 006-02	2.00E-02	1 105-03	3.005-02	3.00E-02	1.00E-04	2.00E-03	1 006-03	5.00E-03	5.90667E-11	1.006-04	7 00E-05	1 17
Exposure fixed months BD y 6 Exposu				Dermal contact with creek water	event duration absorbed dose per event	tevent Doeven	hr it mg/cm2-event	_																	2.4
Dermid Concer Sope Factor CSF _{air} kg-d/mg 2.00E-01 S70E-02 9 10E-02 4.00E-02 9 10E-02 4.00E-02 1.45E-12 1.					Exposure duration Exposure frequency Sidn surface area Body weight Averaging time	ED EF SA BW AT	y d/y cm2 kg d/y	6,600 15 25,550																	
Dermal Reference Dase Rib _{det} mg/kg-d 6 006-02 4 00E-03 1 00E-02 1 00E-02 1 00E-02 1 00E-02 1.00E-03 3.00E-02 1.00E-04 2.00E-03 1.00E-03 1.00E-04 2.00E-03 1.00E-03 1.00E-04 2.00E-03 1.00E-03 1.00E-04 2.00E-03					Dermal Cancer Slope Factor Risk	CSF _{der} R	kg-d/mg fraction		2.005-01	5.70E-02	5.06038E-10	1 891935-06	5 01 093 E-09	9 106-02	6.80E-02		2.405-02	1 105-02	8.00E-01	6.70E+00	1.96728E-10	4 50E-01	6.10206E-12	0 4 00E-01 0.00E+00	8.0
Carcinogenic risk - all routes (undetected organics) TOTAL CARCINOGENIC RSK - ALL ROUTES Sum Rt fraction 6.33E-07 2.96E-07 0.00E+00 0.00E+00 0.00E+00 0.00E+00 4.09E-05 2.02E-08 4.42E-08 9.77E-06 0.00E+00 1.02E-06 0.00E+00 3.03E-07 Non-Carcinogenic risk - all routes (detected organics) Non-Carcinogenic risk - all routes (undetected organics)					Dermal Reference Dose Hazard Quofient	RfD _{der} HQ	mg/kg-d mg/kg-d	·	6 006-02	4 00E-03	1 006-01	1 00E-02	1 005-02	2 00E-02	1 10E-03	3.00E-02	3.00E-02	1.00E-04	2.00E-03	1.00E-03	5.008-03	6.52951E-10	1.006-04		9:
TOTAL CARCINOGENIC RISK - ALL ROUTES Sum Rt fraction 6.33E-07 2.96E-07 0.00E+00 0.00E+00 0.00E+00 0.00E+00 4.09E-05 2.02E-08 4.42E-08 9.77E-06 0.00E+00 1.02E-06 0.00E+00 3.03E-07 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 4.09E-05 2.02E-08 4.42E-08 9.77E-06 0.00E+00 1.02E-06 0.00E+00 3.03E-07 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 4.09E-05 2.02E-08 4.42E-08 9.77E-06 0.00E+00 1.02E-06 0.00E+00 3.03E-07 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 4.09E-05 2.02E-08 4.42E-08 9.77E-06 0.00E+00 1.02E-06 0.00E+00 3.03E-07 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 4.09E-05 2.02E-08 4.42E-08 9.77E-06 0.00E+00 1.02E-06 0.00E+00 3.03E-07 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 4.09E-05 2.02E-08 4.42E-08 9.77E-06 0.00E+00 1.02E-06 0.00E+00 3.03E-07 0.00E+00 0.00																			•	_	-				
Non-Carcinogenic fisk - all routes (detected organics) Non-Carcinogenic fisk - all routes (undetected organics)						Sum Rt	fraction		6.335-07	2.96E-07	0 00E+00	0 00E+00	0 00E+00	8.25E-07	5 92E-08	0 00E+00	4 09E-05	2.025-08	4 42E-06	9 77E-06	0 00E+00	1 025-06	0 00E+00	3.03E-06	
TOTAL NON-CARCINOGENIC HAZARD INDEX - ALL ROUTES Sum HI fraction 0.000110697 0.002692128 0.00841943 0.076361895 17 9866156 0.063466717 0.050302792 0.177305719 0.243625516 0.214447013 0.037575024 0.017004619 0.050281315 0.01302624 0.207132425				Non-Carcinogenic risk - all routes (de	etected organics) detected organics)		fraction																		_

Notes
1 ug/1 = micrograms per Liter
2 ug/m3 = micrograms per cubic meter
3-h/d = houn per day
4 V/d = filen per day

4 Vd = flers per day
5- dy = days per year
6-y = word
6-y = word
7- kg = kilogram
8- d = day
9- h = hour
10- mg/kg-d = miligrams per kilogram per day
11- kg-d/mg = kilograms per day per miligram
12 cm² = square centimeter
13- m3/hr = cubic meter per hour
14- mg/m3 = miligrams per cubic meter
15- mg/cm2-evert = miligrams per square centimeter per event
16- mg/cm3-evert = miligrams per cubic centimeter per event

TABLE 7-25
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW ICE SLOPE FACTOR, WELL D)
Missourl Beethe Works, Cape Girardeau

				····												C	nemicals of Po	tentral Conce	m						
Exposure Route	Parameter	Symbol CSF _{tab}		Noce-1232	Arockor-1242	10900 F Arocky-1248	Arocke-1254	10000-1280 (Fillered)	2.73E-02	genzo(a) authacene	3.08E+00	9980 9980 Berzo(b) fluorcarithene	3.08E-01	00-1911 08(2-Charoethy) Ether	bk(2-Chknokopropyi) Efher	8s (2-ethylhexyl phthaiate)	Bromodichloromethane	2015-02	Chloroberzene	Chlarodisromomelhare	6.10E-02	2 Diberzo(a.h)Anifracene	Diberacium	2 de la company	1 615
	Inhalation Cancer Slope Factor Risk	C3F _{Beh} R	kg-d/mg fraction	0.006+00	1.01E-06	0.006+00	1.11E-06	4.55E-05	5 71E-05	0.005+00	0 00E+00	7.84E-06	0.00E+00					1.19E-07			2.72E-05			1.45E-06	
	Total carcinogenic risk for exposure route	R,	fraction																						
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazzard Quotient Total Hazzard Index	RfD _{tri} h HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	2.95128E-05		3.2464E-05	0 001328075	0 024399584 8 57E-03 2.847092598	0	0	0.00029712	0	0 001809429	0	D	0.000753929	2.66581E-05	0 934736351 1.70E-02 54 98449122	6 182225-05	0.00392043	0	0 00024348	0 00021987	0.000218
Incidental Ingestion of creek water	POE concentration POE concentration Water ingestion rate Exposure trequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AT., ATn.,	ug/i mg/m3 l/d d/y y kg d d	2.99297E-07 2.99297E-07	1 71027E-07 1 71027E-07	1 111685-07 1 111685-07	1.8813E-07 1.8813E-07	7.69621E-06 7.69621E-06	0.003648704 0 003648704		1 12878E-06 1.12878E-06		5.26519E-09 5.26519E-09	0 005342537 0.005342537	0 000774668 0 000774668		0 002226 0 002226				0.011575497 0.011575497	4.88911E-09 4.88911E-09	1.41097E-06 1.41097E-06		
	Average intake from ingestion carcinogens ingestion Cancer Stope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction	1.21827E-14 4.00E-01 4 87E-15	6,96157E-15 4 00E-01 2.78E-15	4.52502E-15 4.00E-01 1.81E-15	7.65772E-15 4.00E-01 3.06E-15	3.132/E-13 4.00E-01 1.25E-13	1.48519E-10 5.50E-02 8.17E-12	494271E-14 7,30E-01 3,61E-14	4.59463E-14 7 30E+00 3.35E-13	7.30E-01	2.14317E-16 7.30E-02 1 56E-17		3.15325E-11	8.35388E-12 1 40E-02 1 17E-13	9.06082E-11 6 20E-02 5 62E-12	1.306-01		7.430065-12 8.405-02 6.245-13		1 99009E-16 7.30E+00 1 45E-15	5.74329E-14	5 18637E-14 7.80E-02 4 05E-15	1 60E
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazzard Quotient Total Hazzard Index	RFD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 421325-13	8.121835-14	5.27919E-14	8.93401E-14 2 00E-06 4 467E-09	3.65482E-12	1 73272E-09 4 00E-03 4.33179E-07	5.7665E-13	5 36041E-13	4.33992E-15	2.50037E-15	2.5371E-09	3.67879E-10 4.00E-02 9.19697E-09	2.00E-02	1.0571E-09 2.00E-02 5.28548E-08	7.00E-04	6.45637E-07 2.00E-02 3.22819E-05	2.00E-02	1 00E-02	2.32177E-15	4 006-03	6.05076E-13 2.00E-04 3.02538E-09	8 00E
Dermal contact with creek water	POE concentration	C.,	ug/l	2.99297E-07	1 710276-07	1 111685-07	1.88135-07	7 69621E-06	0 003648704	1 21429E-06	1 12878E-06	9.13687E-09	5.26519E-09	0.005342537	0.000774668	0 000205232	0.002226	3.4596E-05	1.35956262	0.000182537	0.011575497	4.889116-09	1,410976-06	1.27415E-06	4.006425
	event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sán surface area Body weight Averaging time Averaging time non-carcinogens	tevent Doever EV ED EF SA BW AT ATn	hr mg/cm2-ever events/day y d/y cm2 kg d/y d	r 1 <i>80</i> 907E-13	7.911585-13	5.51653E-13	1.48195E-12	3.78617E-10	1.36534E-10	3 178445-12	5.06557E-12	4.16175E-14	2.36346E-14	3.17633E-11	1.55078E-10	6.52686E-11	3 778716-11	1 99165E-12	1.077526-07	2.87975-12	2.34503E-10	3.407446-14	5.24028E-13	6.38038E-13	3.86609E
	Absorbed dose for caranogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{der} R R,	mg/kg-d kg-d/mg traction fraction	9.72014E-13 4.00E-01 3.89E-13	4.25089E-12 4 00E-01 1 70E-12	4.00E-01	4 00E-01	2.03431E-09 4.00E-01 8.14E-10	7,33597E-10 5 50E-02 4,03E-11	1.70778E-11 2.35E-01 4.01E-12	2.72173E-11 2.35E+00 6.40E-11	2 305-02	1.26989E-13 7 30E-02 9.27E-15	1 10E+00		3.50688E-10 1 40E-02 4.91E-12	2.03035-10 6 205-02 1.265-11	1 30E-01	5.78949E-07	1.54726E-11 8.40E-02 1.30E-12	!	1 83082E-13 7.30E+00 1 34E-12	2.81565-12	3.42817E-12 7 80E-02 2.67E-13	1 60E4
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quoffert Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1 134026-11	4 959376-11	3.45803E-11	9.28958E-11 2.00E-05 4.64479E-06	2.37336E-08	8.55864E-09 4 00E-03 2.13966E-06	1 99248-10	3 175356-10	2.60879E-12	1 48154E-12	1 991085-09	9 72106E-09 4 00E-02 2.43026E-07	3.80E-03	2.36868E-09 2.00E-02 1 18434E-07	7.00E-04	6.206-03	2.00E-02	2.00E-03	2.135955-12	4 00E-03	3.99954E-11 2 00E-04 1 99977E-07	
Carcinogenic risk - all routes (detecte Carcinogenic risk - all routes (undetec OTAL CARCINOGENIC RISK - ALL ROL	cted organics) UTES	Sum Ri	fraction	1.34E-06	5 55E-06	3 155-06	9 45E-06	2.13E-03	8 34E-05	1 286-05	1 875-04	1 40E-05	4 66E-06	2 155-04	0 00E+00	2.09E-05	8 58E-07	1 93E-07	0 00E+00	9 48E-08	2.73E-05	6.62E-04	0 00E+00	2.42E-06	6 285
Non-Carcinogenic itsk - all routes (de Non-Carcinogenic itsk - all routes (uni YOYAL NON-CARCINOGENIC HAZARD	detected organics)	Sum HI	fraction	- 6	0	0	12.16192855		4 243419059	0	0	0	0	0	0 002517535	3.09585243	0 008072162	0 009537899	74 7111965	0 000658484	0 111956852	0	0 033010719	0 727879063	0 2980955

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TABLE 7-25
RME RISK CALCULATIONS FOR CHILD RESIDENT (LOW TCF SLOPE FACTOR, WELL D)
Missouri Bectric Works, Cape Girardeau

							·		a	remicals of Pot	ential Concer	n		
Esposure Route	Parameter	Symbol	Units	deno[1,2,3-cd]Pyrene	-meltry from tholene	qp)tiftdene	froberzene	throsodin-propylantine	entachloraphena	strachloroethana	chloroethene	inyl Chloride	7.01	Confibrition
Debrane konie	Inhalation Cancer Slope Factor	CSF _{bah}	ka-d/ma	3 085-01		<u>z</u>	z	Z	<u> </u>	2.10E+00	6.00E-03	3 00E-02		
	Pisk	R	fraction	0.00E+00						3.136-04	2.53E-06	2.83E-07	ľ	
	Total carcinogenic risk for exposure route	R,	fraction									[741504	175
	Average intake from inhalation non-carcinogens inhalation Reference Dose	l _a RfD _{trik}	mg/kg-d mg/kg-d	0	9 14058E-05	0 001104409 8 576-04	5 71E-04	0	0	0.001736614 1 40E-01	1 14E-02	2.86E-02		
	Hazard Quotient Total Hazard Index	HQ H1	mg/kg-d mg/kg-d			1.268691933	0 208978893			0 012404384	0.431002163	0.003848727	7.(1)(0)	625
incidental ingestion of creek water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration	C	ug/I mg/m3 I/d d/y y	\$ 26519E-09 5.26519E-09				0.007212425 0.007212425						
	Body weight Averaging time carcinogens Averaging time non-carcinogens	BW AT _a ATn _e	kg d d											
	Average intake from ingestion carcinogens	ار حدد	mg/kg-d	2.14317E-16	4.82755E-12	5.83402E-11	6.30342E-12	2.935786-10						
	Ingestion Cancer Slope Factor Risk	CSF _e	kg-d/mg fraction	7.30E-01 1.56E-16				7 00E+00 2 06E-09	1.20E-01 3 78E-14	5 40£-01 1.85£-11	6 00E-03 7.16E-12			
	Total carcinogenic risk for exposure route	Ř,	fraction	1,400,-10				2 002-07	5700-14	12001-11	7.104-12		Y CONTROL	0
	Average intake from ingestion non-carcinogens ingestion Reference Dose	ل RfD _a	mg/kg-d mg/kg-d	2.50037E-15	5.63215E-11 4 00E-03	6.80636E-10 2.00E-02	7.354E-11 5.00E-04	3.42508E-09	3.67107E-12 3.00E-02	3.99434E-10 1 005-02	1.39315E-08 3.00E-04	1.5434E-10 3.00E-03		
	Hazard Quotient Total Hazard Index	HQ HI	mg/kg-d		1 408046-08	3 40318E-08	1.4708E-07		1.22369E-10	3 994346-08	4 643846-05	5.14467E-08	7356-45	
	TOTAL HOZZYC WICHX		mg/kg-d											09
Dermal contact with creek water	POE concentration	C.,	ug/l	5.265196-09	0.0001186	0 001433262	0 000154858	0.007212425	7 73042E-06	0.000841116	0.029336582	0.000325004	- 1	
	event duration absorbed dase per event	tevent Daevent	hr mg/cm2-ever	2.49869E-14	0	2 003335-10	2 524755-12	5.27912E-11	1 035435-11	1 044336-10	1 044506.00	4.44007E-17		
	Event frequency	EV	events/day	2470072-14	•	200001-10	Z-02-07-12	3277122-11	1700-00-11	110-100012-10	120037247	4 40000E-12	į.	
	Exposure duration	ED	у										1	
	Exposure frequency	Œ	ďΛ										1	
	Sidn surface area	SA	cm2											
	Body weight	BW	kg											
	Averaging time	AT	ď/y											
	Averaging time non-carcinogens	ATr _o	ď											
	Absorbed close for carcinogens	DAD	mg/kg-d	1 342556-13	n	1.07639E-09	1.35762E-11	2.83647E-10	1 03991E-10	5.62195E-10	5 73079E-09	2.39685-11		
	Dermal Cancer Slope Factor	CSFour	ka-d/ma	2 30E-01	•			1 80E+00	1.206-01	5.40E-01	9.00E-04		Ì	
	Rick	R	fraction	3 09E-14				5 11E-10	1.25E-11	3 04E-10	5.16E-12		l l	
	Total carcinogenic risk for exposure route	Ř,	fraction	00/2-14				011210	1.444-11	0 010-10	W 100-12	1.700-11	8.176-09	0
	A bready and place for one completeness	DAD	mg/kg-d	1,5663E-12	n	1,255796-08	1,583896-10	3.309216-09	1,213225-09	6.558946-09	6.68592E-08	2.79627E-10	1	
	Absorbed dose for non-cardinogens Dermal Reference Dose	RfD	mg/kg-d	(AROUNE*12	4 00E-03	2.005-02	5 00E-04	-30721E-07	3.006-02	1.00E-02	4.50E-05	3.00E-03	j	
		HQ	mg/kg-d			6.27894E-07			4.04408E-08				Į.	
	Hazard Quotient Total Hazard Index	HI HC3	mg/kg-a mg/kg-d		0	0.4/074E-07	3.10//BE-0/		4.044082-08	0.000745-07	U.UU 1485/57	Y SZURYE-UB	2.846-03	05
							-		· ·					
Carcinogenic risk - all routes (detecti Carcinogenic risk - all routes (undete	ed organics) cted organics)												3 15E-03 1 03E-03	
OTAL CARCINOGENIC RISK - ALL ROL		Sum Rt	fraction	1 70E-05	0 00E+00	0 00E+00	0 00E+00	2.93E-04	3 45E-05	3.38E-04	3.05E-06	1 71E-06	4197.03	
Non-Carcinogenic risk - all routes (de	tected arganics)												1 09E+02	
Non-Carcinogenic risk - all routes (un													1 41E+01	
IOTAL NON-CARCINOGENIC HAZARD	INDEX - ALL ROUTES	Sum HI	fraction	- 7	D 004534032	1 306814953	0 259702702		n 111908817	0 066871694	7 189574741	0.011544947	1.24E+02	

TABLE 7-26
RME RISK CALCULATIONS FOR ADULT RESIDENT (HIGH TCE SLOPE FACTOR, WELL A)
Missouri Bectric Works, Cape Girardeau

															and all all ball									
														Chi	emicals of Poli	inina Concern						8		
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbo	ni Units	Non Contaminant- Specific Parameters	1 1 2.2-Tetrachlaroethan	1 1 2-Trichioroeithane	1,1-Dichloroethane	Total 1,2 Dichloroethene	1 2,4 Trichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1 3-Dichlorobenzene	1,4-Dichlorobergene	2 4,6-Trichlorophenol	2,4-Dinitrotoluene	2 6-Diritrololuene	2-Chlorophenol	3,3-Dichloroberzidine	4,6-Divitro-2-Methyl Phen	Arocker-1016	
Groundwater	Ar	Indoor air	Vapour intrusion - inhalation	POE concentration POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cook Cook IR ET ED BW ATo	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.83 24 350 24 70 25.550 8.760	7.59E-06 7.59E-09	9 30E-05 9 30E-08	2.27E-03 2.27E-06	7.42E-03 7.42E-06	4.09E-03 4.09E-06	1.925-04 1.925-07	1.06E-04 1.06E-07		6.16E-06		0.00E+00 0.00E+00	0.00E+00 0.00E+00	3 06E-04 3 06E-07	0.00E+00 0.00E+00	8.00E+00 0 00E+00		0 00E+
				Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _{INA} R R _i	mg/kg-d kg-d/mg fraction fraction		7 10103E-10 2.03E-01 1 44E-10	8.70087E-09 5.70E-02 4.96E-10	2.12376E-07	6 94198E-07	3.82651E-07	1.79631E-08 9.10E-02 1.63E-09	9 917126-09	8.32664E-07	5.76316E-07 2.20E-02 1.27E-08		0	0	2.862875-08	0	O	6.3245E-12 4 00E-01 2.53E-12	4.00E+
				Average intake from inindiation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	RfD _{lesh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		2.07113E-09	2.53775E-08	6 1943E-07	2.02475E-06	1 11607E-06 1 14E-03 0 000979005	5.23923E-08 1 40E-03 3 74231E-05	1 146-03		1.68092E-06 2.30E-01 7.30835E-06	0	0	0	8.35003E-08	0	0	1,84465E-11	··-·
	Groundwater	Top Water	ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C., C., IR EF ED BW AI., AIn.,	ug/i mg/m3 l/d d/y y kg d	2 350 24 70 25,550 8,760	0.049115 0.049115	0.15444 D 15444	6.479 6.479	10 97 10 97	90°23 90°23	0.27144 0.27144	0 14508 0 14508		49.6 <u>2</u> 49 <u>62</u>		1.10916 1.10916	0 1413 0.1411	1.881 1.861	0.157795 0.157795	0.101365 0.101365	0.229 0.229	0 1308 0 1328
				Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction		4 61354E-07 2.00E-01 9.23E-08	1.45071E-06 5.70E-02 8.27E-08	6 08595E-05	0.000103045	0.000568485	2.54973E-06 9 10E-02 2.32E-07	1.36279E-06 6.80E-02 9.27E-08	0.000413213	0 000466098 2.408-02 1.125-05	1 10E-02	1 04187E-05 6.80E-01 7 08E-06	1.3254E-06 6.70E+00 8.88E-06	1.76689E-05	1 48222E-06 4.50E-01 6.67E-07	9.52157E-07	2.15108E-06 4.00E-01 8.60E-07	4.006-
				Average intake from Ingestion non-carcinogens Ingestion Reference Dase Hazzard Quotient Total Hazard Index	KfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1 34562E-06 6.00E-02 2.24269E-05	4.00E-03	1.00E-01	1.00E-02	0 001658082 1.00E-02 0 165808219	2.005-02	1.105-03		3.00E-02		3 03879E-05 2.00E-03 0 015193973	1 00E-03	5 006-03		2.77712E-06 1 00E-04 0 027771233	7 005-05	3.63896-
			Dermal contact with tap water	POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carchogens	C _w tevent Dosever EV ED EF SA BW AT AIn _a	ug/l fr mg/cm2-ever events/day y d/y cm2 kg d/y d	0.58 1 24 350 18.000 70 25 550 8.760	0.049115 6.91995E-10	0.15444 1.61619E-09	6.479 5 68815E-08	10.97	60 52 8.89856E-06	0.27144 1.48291E-09	0.14508 1 60454E-09		49.62 3.69637E-06		1 10916 7 65966E-09	0.1411	1.881 2.36685-08	0.157795 7.11633E-09	0 101365 7.75888E-10	0.229 0	0.13 4.32331E
				Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{ater} R R ₁	mg/kg-d kg-d/mg traction traction		5.85013E-08 2.00E-01 1 17E-08	5.70E-02	4 80877E-06	9.18642E-06	0.000752286	1.25366E-07 9 10E-02 1.14E-08	1.35648E-07 6.80E-02 9.22E-09		0.000312491 2.406-02 7.506-06		6 47549E-07 8 00E-01 5.18E-07	0 6 70E+00 0.00E+00	2.00089E-06	6.01615E-07 4 50E-01 2.71E-07	6.55937E-08	0 4 00E-01 0 00E+00	3.65493E- 4 00E- 1.46E-
				Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{dar} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1.70629E-07 6.00E-02 2.84381E-06	4 006-03	1 00E-01	1 00E-02	0 002194166 1 00E-02 0 21941663	2.006-02	1.106-03		3.00E-02		2.00E-03	1 00E-03	5.83594E-06 5 00E-03 0 001167187		1.91315E-07 1 00E-04 0.001913149	0 7 00E-05 0	1.06602E-
famb, a -d3	Alf	Indoor Air	Vapors from tap water	Concentration in top water Concentration in top water Volofilization factor	C., C., VF C.,	ug/l mg/m3 dimensioniess	0.0005 y	0.049115 0.049115	0 15444 Y	6.479 6.479 9 0.0032395	10 97 10 97 9 0 005485	y	0 27144 0 27144 / 0 00013572	0.14508 0.14508	43 99 Y	49.62 49.62 y		1.10916 1 10916	0 1411 0 1411	1.881 1.881 y	0.1577 9 5 0.157795	0.101365 0.101365	0 229	0 132 0 132
₍ ыну савсиатеа f	A COPC WITH HE	н вуз Low > 16-5 am.n	n3/mol, thase with a "y")	POE concentration Inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	IR ET EF ED BW AT _o	mg/m3 m3/hr h/d d/y y kg d	0.83 24 350 24 70 25.550 8.760	2.700/00/0		0 0032375	V W.2465	u.vstab	0 00013372	U.MANU/254	0.021995	0.02481	U	o	0	0.0009405	0	0	0.0001145	
				Average intake from inhalation carcinogens	i,	mg/kg-d		2.29754E-06	7.22453E-06	0.00030308	0.000513164	0.002831057	1.26977E-05	6.78668E-06	0.002057802	0.002321167	0	0	0	B.7991E-05	0	0	1 071245-05	

TABLE 7-26
RME RISK CALCULATIONS FOR ADULT RESIDENT (HIGH TCE SLOPE FACTOR, WELL A)

									<u> </u>			Chemica	s of Potential C	oncern											
Exposure Route	Pa rameter	Symbo	ol Units	Aroctor-1232	Aroclor-1242	Aroctor-1248	Aroclor-1254	Aroclor-1260 (Fittered)	Вегоеле	Berzo(a) anthracene	eus/dip/csue	Serzo(b)fluoranthene	Berzo(k) fluoranithene	bs(2-Chloroethy) Ether	ba(2-Chlorokopropy)] Ether	Bs (2-ethylhexyl phthadale)	Bromodichloromethane	Corbon Tetrachloride	Chlorobergane	ChlarodBromomethane	Chlaroform	Dibenzo(a.h)Anffracene	Dibenzofuran	Hexachlaro-1 3-Butadiene	Hexachlorobergene
Van er einer einer Johnsteinen	POE concentration	C _{o-in}		0.00€+00	3.485-08	0.00E+00	5 005-08	2086-06	2.176-03	0.00E+00	0.005+00	5.215-08	0.00E+00	4.115-04	0.00E+00	0.00E+00	1.206-03	3.046-05	1.525+00	9.87E-05	1 13E-02	0 00E+00	3.256-04	7 485-07	1.206-06
Vapour intrusion - inhalation	POE concentration inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Confi IR ET ED BW ATo	mg/m3 m3/hr h/d d/y y kg d d	0.00E+00	3.485-11	0.00€+00	5.006-11	2.085-09	2.17E-06	0 00E+00	0 006+00	5.216-11	0.006+00	4 11E-07	0.006+00	0.00E+00	1.206-06	3.04E-08	1.526-03	9.87E- 0 8	1 136-05	0 00€+00	3.25E-07	7 48 <u>5</u> -10	1.206-09
	Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _{IN} R R _t	mg/kg-d kg-d/mg fraction fraction	0 4.00E-01 0.00E+00	3 25581E-12 4.00E-01 1.30E-12	0 4.00E-01 0.00E+00	4.67789E-12 4.00E-01 1.87E-12	4.00E-01	2.73E-02	0 3.08E-01 00+ 3 00,0	0 3 08E+00 0 00E+00	3 08E-01	3 08E-01	3.84522E-08 1 16E+00 4.46E-08		0	1.12269E-07	2.84415E-09 5 206-02 1 48E-10	0.000142208	9.23415E-09	1 0572E-06 8.10E-02 8.56E-08	0 3.08E-01 0.00E+00	3.04063E-08	6 99812E-11 7.70E-02 5 39E-12	1 61E+00
	Average intake from inhalation non-carcinogens Inhalation Reference Dose Hazard Quofient Total Hazard Index	l _o RfD _{ech} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	· · · · · · · · · · · · · · · · · · ·	9 49611E-12		1.364385-11	5 67584E-10	5.92142E-07 8.57E-03 6.90948E-05	0	· · ·	1.42169E-11	o 	1.121526-07	0	0	3.27452E-07	8.2954SE-09	0 000414773 1 70E-02 0 024398388	2 69329E-08	3.08351E-06	0	8.84849E-08	2.041125-10	3.27452E-10
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw Cw IR EF ED BW ATo	ug/l mg/m3 l/d d/y Y kg d	0 1603 0 1603	0.0916 0.0916	0 05954 0.05954	0.10076 0.10076	4.122 4.122		0.65036 0.65036	0.60456 0 60456		0.5313 0.5313	5.616 5 616		109 92 109.92		0 04389 0 04389	2901.18 2901 18	0.19188 0.19188	12.168 12.168	0 49335 0 49335	0 7557 0 7557	0 68242 0 68242	
	Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l, CSF. R R,	mg/kg-d kg-d/mg traction fraction	1.50575E-06 4 00E-01 6.02E-07	8.60431E-07 4 00E-01 3.44E-07	5.5928E-07 4 00E-01 2.24E-07	9 46474E-07 4 00E-01 3.79E-07	4 00E-01		6.10906E-06 7 30E-01 4 46E-06	5.67884E-06 7 30E+00 4 15E-05	7 30E-01	4 99068E-06 7.30E-02 3.64E-07	5 2753E-05 1 10E+00 5.80E-05	7.649 19E-06	0 001032517 1 405-02 1 456-05	6 206-02	4 12274E-07 1.30E-01 5.36E-08	0.027251789	1 8024E-06 8.40E-02 1 51E-07	0.000114298	4 63421E-06 7 30E+00 3 38E-05	7.09855E-06	6 41021E-06 7.80E-02 5 00E-07	1 60E+00
_	Average intake from ingestion non-carcinogens ingestion Reference Dase Hazard Quotient Total Hazard index	l, RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	4.39178E-06	2.50959E-06	1 63123E-06	2.76055E-06 2.00E-05 0 138027397	0 000112932	0.002074795 4.00E-03 0.51869863	1 781816-05	1 65633E-05	2.52653E-05	1 45562E-05	0 0001 53863	4 00E-02	0 003011507 2.006-02 0 150575342		7 00E-04	0.079484384 2.00E-02 3 974219178	2.00E-02	0.00033337 1.00E-02 0.033336986	1 35164E-05	2.07041E-05 4 00E-03 0.005176027	1.86964E-05 2.00E-04 0.093482192	
Dermal contact with tap water	POE concentration	C.,	υ φ/ Ι	0 1603	0 0916	0.05754	0.10076	4 122	75.73	0 65036	0 60456	0.922185	0.5313	5 616	0.81432	109.92	2.34	0.04389	2901.18	0.19188	12.168	0.49335	0 7557	0.68242	0.67784
	event duration absorbed dase per event Event frequency Exposure frequency Exposure frequency Skin surface area Body weight Averaging firme Averaging firme non-carcinogens	levent Daevei EV ED EF SA BW AT ATn _o	hr mg/cm2-ever events/day y d/y cm2 kg d/y d	5.21778E-08	2.28188E-07	1.59109E-07	4.27428E-07	0.000109202	1.28037E-06	9 16736E-07	1.46103E-06	2.26152E-06	1.284325-06	1.726385-08	8.77868E-08	1.8825E-05	2.13911E-08	1.32811E-09	0.00011633	1.63014E-09	1.2333E-07	1.85163E-06	1.511426-07	1.84025E-07	3.52242E-07
	Absorbed dose for carcinogens Dermal Cancer Slape Factor Risk Total carcinogenic risk for exposure route	DAD。 CSFam R R ₁	mg/kg-d kg-d/mg fraction fraction	4 41112E-06 4 00E-01 1 76E-06	1 92911E-05 4.00E-01 7 72E-06	1.34511E-05 4.00E-01 5.38E-06		4.00E-01		7 7501E-05 2.35E-01 1,82E-05	0.000123515 2.35E+00 2.90E-04	2.30E-02	7 30E-02	1 45949E-06 1 10E+00 1.61E-06		0.001591465 1 40E-02 2.23E-05	6.20E-02		0.009834593	1.37813E-07 8.40E-02 1.16E-08	1 04263E-05	0.000156537 7.30E+00 1,14E-03		1.55575E-05 7.80E-02 1.21E-06	1 60E+00
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.28658E-05	5 62656E-05	3.92325E-05	0 000105393 2.00E-05 5 269657043		0.000315707 4.00E-03 0.078926641	0.000226045	0.000360253	0 000557635	0.000316682	4.25684E-06	4 00E-02	3 BOE-03		7 00E-04	6.20E-03	4.01954E-07 2.00E-02 2.00977E-05	2.00E-03	0.000456565	4 00E-03	2.00E-04	8 685425-05 8 005-04 0 108567769
Vapors from tap water	Concentration in tap water Concentration in tap water Volatilization factor	ري ري الا	ug/l mg/m3 dimensionless	0 1603 0 1603 0	у	0.05954 0.05954 0	0.10076 Y	4.122 4.122 9 0.002061	75.73 Y	0 65036 0 65036	0.60456 0.60456		0 5313	5 616 Y		109 92 109 92	2.34 y	0 04389 0 04389 y 0.000021945	2901 18 2901 18 y	Ø 19188 Y	12 168 12 168 7	0 49335 0 49335	0.7557 0.7557 y	0 68242	0 67784 Y
13/mol. those with a "y")	POE concentration inhalation rate Exposure firms Exposure frequency Exposure duration Body weight Averaging firms carcinogens Averaging firms non-carcinogens	Co-top IR ET ED BW ATo ATo	mg/m3 m3/m h/d d/y y kg d							Ü	•				Ū	·						0			0 00033892
	Average intake from inhalation carcinogens	l _b	mg/kg-d	0	4 28494E-06	0	4 71344E-06	0 000192822	0.003542563	0	0	4.31388E-05	0	0.00026271	0	0	0 000109463	2.053125-06	0 135713907	8 97 <i>5</i> 93E-06	0 000569205	0	3.53508E-05	3.19228E-05	3 17086E-05

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TABLE 7-26
RME RISK CALCULATIONS FOR ADULT RESIDENT (HIGH TCE SLOPE FACTOR, WELL A)
Missourt Bectric Works, Cape Ghardeau

						Ch	emicals of Pol	enhal Concern	1					
Exposure Route	Parameter	Symbol	Units	Indeno(1,2,3-cd)Pyrene	2-methytraphthalene	Maphiliciene	Whobenzene	Niirosodi-n-propykamine	Pentochlorophenol	Tetrochloroethene	Trichloroeithene	Vry/ Crioride	Total	
	· · · · · · · · · · · · · · · · · · ·													
Vapour intrusion - inhalation	POE concentration POE concentration Inholation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time corcinogens Averaging time non-carchogens	Com Com IR ET ED BW AT.	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00E+00 0.00E+00		2.75E-04 2.75E-07	6.87E-09	0.00E+00 0.00E+00	0.00E+00 0.00E+00	1.31E-06	2.506-02 2.506-05	9 36E-04 9.36E-07		
	Average intake from inhalation carcinogers inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	l _u CSF _{BA} R R ₁	mg/kg-d kg-d/mg fraction fraction	0 3.08E-01 0.00E+00		2.572846-08	6.427426-10	0	0	1.22561E-07 2 10E+00 2.57E-07	2.33894E-06 4.00E-01 9.36E-07	8.767E-08 3 00E-02 2.63E-09	<u>_</u> 1,3640.	
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	l _o RfD _m , HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0		7.50411E-08 8.57E-04 8.75625E-05	1.87466E-09 5.71E-04 3.28312E-06	0	0	1.40E-01	6.82192E-06 1 14E-02 0.000598414	2.86E-02	1,624-02	
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw Cw R EF ED BW AT _c ATn _c	ug/i mg/m3 I/d d/y y kg d	0.5313 0.5313		1.8183 1.8183	0.19646 0.19646	7.5816 7 5816	4,14032 4 14032	5.39 5.39	15.25 15.25	0.34164 0.34164		
	Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R _i	mg/kg-d kg-d/mg fraction fraction	4 99068E-06 7.30E-01 3.64E-06		1.707998-05	1.845425-06	7 12166E-05 7.00E+00 4 99E-04	3.88915E-05 1.20E-01 4.67E-06	5.06301E-05 5.40E-01 2.73E-05	0.000143249 4 00E-01 5.73E-05	3.20914E-06 7.20E-01 2.31E-06	e lfiede	
	Average intake from ingestion non-carcinogens Ingestion Reference Dose Hazard Quotient Total Hazard Index	L RfD。 HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.455626-05		4.98164E-05 2.00E-02 0.002490822	5.38247E-06 5.00E-04 0.010764932	0 000207715	3.00E-02	0.000147671 1.00E-02 0.014767123	0 000417808 3 00E-04 1.392694064	0 00000936 3 00E-03 0.00312	∠89 ±+00)	
Dermal contact with tap water	POE concentration	C _w	ug/l	0.5313		1.8183	0 19646	7 5916	4.14032	5.39	15.25	0.34164		
	event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Sidn surface area Body weight Averaging firme non-carcinogens	tevent	hr mg/cm2-ever events/day y d/y cm2 kg d/y d			1.33267E-07			5.58223E-06					
	Absorbed close for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{dur} R R _t	mg/kg-d kg-d/mg fraction fraction	0.000114789 2.30E-01 2.64E-05		1.12664E-05	1.36137E-07	2.38216E-06 1.80E+00 4.29E-06	0.000471922 1.206-01 5.66E-05	3.05257E-05 5 40E-01 1 65E-05	6.00E-02	1,70673E-07 7,20E-01 1 23E-07	£.30£.00	
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _{no} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0 000334801	4 006-03	2.00E-02	3.97067E-07 5 00E-04 0 000794134	6.94796E-06	0 001376441 3 00E-02 0.045881353	1.00E-02		3 00E-03	1.35£+01	
Vapars from tap water	Concentration in tap water Concentration in tap water Volatilization factor	C., C., VF	ug/l mg/m3 cimensioniess	0.5313 0.5313 V		1.8163 1.8183 y	0.19646 0 19646	7.5816 7.5816	4 14032 4.14032	5.39 5.39	15.25 15.25	0.34164 0.34164 y		
/mol. those with a "y")	POE concentration Inhalation rate Exposure time Exposure firme Exposure duration Body weight Averaging time carchogens Averaging time non-carchogens	Co-top IR ET EF ED BW AT _o ATn _o	mg/m3 m3/hr h/d d/y y kg d	o'		0.00090915		0	0	0.002695			:	
	Average intake from inhalation carcinogens	L	mg/kg-d	0		0 CUEDE DE	9 19018E-06	0	n	0 000252138	0.000713378	1 598155-05		

TABLE 7-26 RME RISK CALCULATIONS FOR ADULT RESIDENT (HIGH TCE SLOPE FACTOR, WELL A) Missouri Electric Works, Cape Givardeau

														Che	emicals of Pote	enhai Concern						_		
	oosure edium	Exposure Point	Exposure Route	Parameter	Symbo	u Untis	Non Contaminant- Specific Parameters	1,1,22-Tefrachlaroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	rokal 1,2 Dichloroethene	1,2.4 Trichlorobenzene	,2-Dichloroelhane	1,2-Dichloropropane	.3-Dichlorobenzene		2.4.6-Trichlorophenol	2 4-Dinitrotokuene	2 6-Diriffototuene	2-Chlorophenol	3.9-Dichloroberziolare	1,6-Dinitro-2-Meltnyl Phenol	Aroctor-1016	l
			 .	Inhalation Cancer Slope Factor	CSF _M	kg-d/mg fraction		2.03E-01 4.66E-07	5.70E-02 4.12E-07				9 10E-02 1 16E-06		- _	2.20E-02 5.11E-05	1,09E-02 0.00E+00						4.00E-01 4.28E-06	
				Risk Total carcinogenic risk for exposure route	Ř,	fraction		4X0C-07	×12201				1100-00			3.112-03	0.002-00						4.200-00	
				Average intake from inhalation non-carcinogens	l,	mg/kg-d		6.70117E-06	2.10715E-05	0.000883984	0.001496729	0 008257249			0.006001923		0	0	0	0 000256641	0	0	3 12444E-05	j
				Inhalation Reference Dose Hazard Quotient	RfD _m n HQ	mg/kg-d mg/kg-d						1 14E-03 7 243201154	1 40E-03 0.026453448	1 14E-03 0.017363576		2.30E-01 0.029435092								
				Total Hazard Index	Н	mg/kg-d						-												
Surfac	ce Water	Creek	incidental ingestion of creek water	POE concentration POE concentration	<u>رب</u>	ug/l mg/m3		3.87145E-05 3.87145E-05				0.003415705									0.000124381		4 276E-07 4.276E-07	
				Water Ingestion rate	IR	Vd	0.05																	
				Exposure frequency	푠	d/y	52																	
				Exposure duration	Ð	y	24																	
				Body weight	AT _o	kg d	70 25.550																	
				Averaging time carcinogens Averaging time non-carcinogens	Aln _o	d	8,760																	
					VII.P		0,700																	
				Average intake from ingestion carcinogens ingestion Cancer Slope Factor	C2£°	mg/kg-d kg-d/mg		1.350736-12 2.006-01			5.87834E-09	1 191726-10	9.00928E-12 9 10E-02	4.8153E-12 6.80E-02	9 67277E-09	1.16096E-08 2.40E-02	2.81642E-12 1 10E-02	3 65138E-11 6 80E-01	3 87972E-12 6 70E+00	5 17302E-11	4,33959E-12 4 50E-01	2.78768E-12	1 49188E-14 4 00E-01	
				Risk	R	fraction		2.706-13					8 20E-13	3.27E-13		2.79E-10		2.50E-11	2.605-11		1 95E-12		5.97E-15	
				Total carchagenic risk for exposure route	R,	fraction															.,,,,,			
				Average intake from ingestion non-carcinogens	<u>ا</u>	mg/kg-d		3.93964E-12				3.47586E-10		1.40446E-11		3.38614E-08					1,26571E-11			
				Ingestion Reference Dose	RfD, HQ	mg/kg-d		6.00E-02				1 006-02	2.00E-02	1 105-03	3 00E-02	3.005-02	1 006-04	2.00E-03	1.00E-03	5.00E-03		1.00E-04		
				Hazard Quotient Total Hazard Index	HI	mg/kg-d mg/kg-d		6.56607E-11	3/3/6/207	3 1767/12-07	1 / 14522-06	3.47586E-08	1.313635-07	1.2/6/00-06	7 404066-07	1 12871E-06	0 2140/240	5.360675-06	1 131575-06	3 0176E-08		8.130/56-06	6.21616E-10	
			Dermal contact with creek water	POE concentration	C.	ug/l		3.87145E-05	0 00014692	0.005107025	0 168484251	0 003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.07239E-05	0.001055153	0.0001112	0.001482685	0 000124381	7.990026-05	4.276E-07	, 2
				event duration	tevent	hr	2																	
				absorbed dose per event	Doever		1	1.01289E-12	2,999415-12	9 41817E-11	3 521 19E-09	9.32615E-10	2.97547E-12	3.08949E-12	5.39677E-08	4.70013E-08	1.27568E-11	1.3531E-11	0	3.66143E-11	1.04164E-11	1.13569E-12	0	1
				Event frequency	EV	events/day	1																	
				Exposure duration Exposure frequency	ED EF	d/v	24 52																	
				Sidn surface area	ŠĀ	cm2	18,000																	
				Body weight	BW	kg	70																	
				Averaging time	AT	d/y	25,550																	
				Averaging time non-carcinogens	ATn _e	đ	8,760																	
				Absorbed dose for carcinogens	DAD.	mg/kg-d		1.27222E-11		1 18295E-09	4 4227E-08	1.171395-08			6.77847E-07	5.90347E-07		1.69953E-10		4.59884E-10		1.42646E-11		וו (
				Dermal Cancer Slope Factor Risk	C2F _{de}	kg-d/mg traction		2.006-01					9 10E-02 3 40E-12	6.80E-02 2.64E-12		2.40E-02 1.42E-08	1 10E-02 1.76E-12	8.00E-01 1.36E-10	6.70E+00 0.00E+00		4 50E-01		4 00E-01 0 00E+00	
				ross. Total carcinogenic risk for exposure route	Ř,	fraction		2.545-12	2.100-12				3 400-12	200012		1.425-00	1./02-12	1,360-10	0 002-00		5.89£-11		0 0000)
				Absorbed dose for non-carcinogens	DAD	mg/kg-d		3.71064E-11	1 0988E-10	3 45026E-09	1 28995E-07	3 41655E-08	1.09004E-10	1 13181E-10	1 977056-06	1.72185E-06	4.673325-10	4 95697E-10	0	1.34133E-09	3.81594E-10	4 16049E-11	0	54
				Dermal Reference Dase	RfD _{der}	mg/kg-d		6.00E-02					2.006-02	1 105-03		3.005-02	1.00E-04	2.00E-03	1.00E-03	5.00E-03		1.006-04	7.00E-05	í
				Hazard Quoffent Total Hazard Index	HQ HI	mg/kg-d mg/kg-d		6.1844E-10	2.747015-08	3.45026E-08	1.29995E-05	3.41655E-06	5.45018E-09	1.028918-07	6.59018E-05	5.73949E-Q5	4.67332E-06	2.47848E-07	0	2.68266E-07		4 16049E-07	0	ı
			Carcinogenic risk - all routes (detecte																	-	·			
		·	Carcinogenic risk - all routes (undetec	cted organics)	Sum Pi	fraction	 	5 71E-07	5 03E-07	0 00E+00	0 00E+00	0 005+00	1 405-06	1 025-07	0 005+00	6.98E-05	1.875-08	7 60E-06	8.885-06	0 00E+00	9 38E-07	0 00E+00	5 15E-06	
			Non-Carcinogenic isk - all routes (de	ected organics)	•••••			071207			0 000				0 002 00				0.002.00	0 002.00	7 000 07	0 002.00		3
			Non-Carcinogenic risk - ali routes (una TOTAL NON-CARCINOGENIC HAZARD		Sum HI	fraction		2.52714E-05	0 001157468	0 001915364	0 032748781	7 629408459	0 026880996	0 021362187	0 077382249	0 105197103	0 049551913	0 016138616	0 003865765	0 011474335	- 0	0 029684879	0 089628181	
																				-				
= micrograms per Liter 13 = micrograms per cuit																								
hours per day																								
liters per day																								
days per yed?																								
ea.																								
kliogram																								
kay																								
	dogram our rise	,																						
hour afrod a millonoms per kil																								
g/kg-d = miligrams per idi																								
rrour g/kg-ci = miligrams per kli -ci/mg = kliograms per ck n2 = square centimeter																								
g/kg-d = miligrams per idi -d/mg = kliograms per da																								
g/kg-ci = milligrams per ldi -ci/mg = idlograms per do n2 = square centimeter 3/hr = cubic meter per hi g/m3 = milligrams per cul	nour ubic meter																							
g/kg-d = miligrams per kli -d/mg = kliograms per do n2 = square centimeter	nour ubic meter rs per square ce																							

TABLE 7-26
RME RISK CALCULATIONS FOR ADULT RESIDENT (HIGH TCE SLOPE FACTOR, WELL A)
Missouri Electric Works, Cape Girardoau

				··								Chemica	s of Potential (oncern											
Exposure Route	Parameter	Symbo	al Units	Arocka-1232	Arockor-1242	Arockor-1248	Arackar-1254	Arockor-1260 (Filtered)	Bertzene	Berzo(c) cnftracere	Berzo(d)pyrene	Benzo(b)fluoranthene	Berzo(k) fluorcarithene	bs(2-Chloroethyl) Ether	bs(2-Cirlorokopropyl) Effner	8s (2-ethythexyl phithalate)	Bromodichloromethane	Carbon Telractionide	Chlorobenzena	Chlorodibromomethane	Chloroform	Dibenzo(a.h)Antfracene	Dibercofuran	Hexachtoro-1,3-Butadiene	
	Inhalation Cancer Slope Factor	CSF _{mh}	kg-d/mg fraction	4.00E-01 0.00€+00	4.00E-01 1.71E-06	4.00E-01 0.00E+00	4 00E-01 1.89E-06	4 00E-01 7.71E-05	2.73E-02 9.67E-05	3.08E-01 0.00E+00	3 08E+00 0 00E+00	3 08E-01 1.33E-05	3 08E-01 0.00E+00	1 16E+00 3.05E-04				5.206-02 1.076-07			8.10E-02 4.61E-05	3 08E-01 0 00E+00		7 70E-02 2 46E-06	
	Total carcinogenic risk for exposure route	Ř,	fraction	0200,00	1.712-00	0.002.00	1272 00	131200	7.00 - 00	4 00E-00	0 002-00	1.000.00	UZOL TO	3.032-04				IAI/E-Q/			4.610-05	0.002-00		2 400-00	2116
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	દુ RfD _m HQ H1	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	1.24978E-05	0	1.37475E-05	0.0005623999	0 010332477 8 57E-03 1.205656559	0	0	0.000125821	0	0 000766238	0	0	0 000319266	5.98828E-06	0.39583223 1 70E-02 23.28424883	2.61798E-05	0.001660182	0	0 000103106	9.31083E-05	9.24834E
incidental ingestion of creek water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C C IR EF ED BW AT., AIn,	ug/l mg/m3 l/d d/y y kg d d	_	1 71027E-07 1.71027E-07			7.69621E-06 7.69621E-06	0 003648704 0 003648704						0.000774468 0.000774668		0.002226 0 002226	3.4596E-05 3.4596E-05			0.011575497 0.011575497			1.27415E-06 1.27415E-06	
	Average intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R _t	mg/kg-d kg-d/mg traction traction	1 04423E-14 4.00E-01 4.18E-15	5.96706E-15 4.00E-01 2.39E-15	3.87859E-15 4 00E-01 1 55E-15	6.56376E-15 4 00E-01 2.63E-15	2.68518E-13 4.00E-01 1 07E-13	1.27302E-10 5.50E-02 7.00E-12	4.23661E-14 7.30E-01 3.09E-14	3.93826E-14 7 30E+00 2.87E-13	3 18851E-16 7.30E-01 2.33E-16	1.837E-16 7.30E-02 1.34E-17	1.86399E-10 1 10E+00 2.05E-10	2.70278E-11	7 16047E-12 1 40E-02 1 00E-13	6.20E-02	1.20704E-12 1.30E-01 1.57E-13	4 74346E-08	6.36863E-12 8.40E-02 5.35E-13	4 03864E-10	1.70579E-16 7.30E+00 1.25E-15	4 92282E-14	4.44546E-14 7.80E-02 3 47E-15	1 60E+0
	Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	K RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	3 04569E-14	1 74039E-14	1.13125E-14	1,91443E-14 2,006-05 9,57215E-10	7.83176E-13	3.71297E-10 4 00E-03 9.28242E-08	1.23568E-13	1.14866E-13	9.299836-16	5.35793E-16	5.43663E-10	7.883125-11 4.005-02 1.97078E-09	2.08847E-11 2.006-02 1.04423E-09		3.52053E-12 7.00E-04 5.02933E-09	2 00E-02	1.85752E-11 2.006-02 9 28758E-10	1 006-02	4.97522E-16	4 00E-03	1.29659E-13 2 00E-04 6 48296E-10	8 00E4
Dermal contact with creek water	POE concentration	C.	ug/l	2.99297E-07	1.71027E-07	1 111686-07	1.88136-07	7,69621E-06	0.003648704	1.21429E-06	1.12878E-06	9 13887E-09	5.26519E-09	0.005342537	0.000774668	0 000205232	0.002226	3.4596E-05	1.35956262	0.000182537	0.011575497	4,889116-09	1.410975-06	1.27415E-06	4.00642E4
	event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	tevent Dosever EV ED EF SA BW AT ATn _e		r 1809075-13	7 911585-13	5.51653E-13	1.481955-12	3.78617E-10	1.36534E-10	3.17844E-12	5.06557E-12	4.16175E-14	2.36346E-14	3.17633E-11	1.55078E-10	6.52686E-11	3.77871E-11	1.99165E-12	1 077525-07	2.8797E-12	2.34503E-10	3.407445-14	5.240285-13	6.3803 85-13	3.86609E-1
	Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenia risk for exposure route	DAD _e CSF _{der} R R _t	mg/kg-d kg-d/mg fraction fraction	2.27224E-12 4.00E-01 9.09E-13	9 93714E-12 4.00E-01 3.97E-12	6.9289E-12 4 00E-01 2.77E-12	1.86136E-11 4 00E-01 7.45E-12	4.75552E-09 4.00E-01 1.90E-09	1.7149E-09 5.50E-02 9.43E-11	3.9922E-11 2.35E-01 9.38E-12	6.36248E-11 2.35E+00 1.50E-10	2.30E-02	2.96857E-13 7 30E-02 2.17E-14	3 98954E-10 1 10E+00 4 39E-10	1.94782E-09	8 1979E-10 1 40E-02 1 15E-11	4.74615E-10 6.20E-02 2.94E-11	2.50156F-11 1.30F-01 3.25F-12	1 35339E-06	3.61698E-11 8.40E-02 3.04E-12	2.94541E-09	4.27983E-13 7.30E+00 3.12E-12	6.581926-12	8 01392E-12 7 80E-02 6.25E-13	1 60E+0
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quofient Total Hazard Index	DAD _{nc} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	6.62737E-12	2.89833E-11	2.020936-11	5.42897E-11 2.00E-05 2.71449E-06	1.387035-06	5.0018E-09 4 00E-03 1.25045E-06	1 16439E-10	1.85572E-10	1 52462E-12	8 65833E-13	1 16362E-09	5.68114E-09 4 00E-02 1 42028E-07	2.39105E-09 3.80E-03 6.29225E-07		7.29622E-11 7.00E-04 1.04232E-07	3.94738E-06 6.20E-03 0.000636674	2.00E-02		1 248286-12	1 91973E-11 4 00E-03 4.79931E-09	2.33739E-11 2 00E-04 1 1687E-07	8 00E-0
arcinogenic risk - all routes (detected arcinogenic risk - all routes (undetec DTAL CARCINOGENIC RISK - ALL ROU	ted organics)	Sum Pt	fraction	2 375-06	9 77E-06	5 60E-06	1 67E-05	3 79 E-03	1 42E-04	2.27E-05	3.325-04	2 40E-05	8 295-06	3 64E-04	0 00E+00	3 67E-05	1 47E-06	1 755-07	0 00E+00	1 63E-07	4 626-05	1 18E-03	0 00E+00	4 17E-06	1 095-0
ion-Carcinogenic risk - all routes (det ion-Carcinogenic risk - all routes (und OTAL NON-CARCINOGENIC HAZARD	ected organics) letected organics)		fraction	- 0			5 407687156		1 803352269			1	727130						31 9099987				0 014492982		

TABLE 7-26
RME RISK CALCULATIONS FOR ADULT RESIDENT (HIGH TCE SLOPE FACTOR, WELL A)
Missouri Elechic Works, Cape Givardeau

						Ch	emicals of Pot	ential Concern						
				Pyrene	1 670			damine	7	Q				
	Parameter	0 mah al		deno(1,2.3-cd)Pyrer	nethytnaphtho	phihdene	enezuequi	rosod-n-propy	ntachloropher	Inachloroeffien	chloroethene	y/ Chloride	g	
Exposure Roule	Parameter Inhabition Concer Slope Factor	Symbol CSF _{bb}	Units kg-d/mg	3.086-01		<u>ž</u>		₹		2 10E+00	<u>₹</u>	3.00E-02	<u> </u>	ــــــــــــــــــــــــــــــــــــــ
	Risk	R	fraction	0.00E+00						5.29E-04	2.85E-04	4.795-07		
	Total carcinogenic risk for exposure route	R _f	fraction									. [1.476-05	19
	Average intake from inhalation non-carcinogens	L	mg/kg-d	٥	0.000	248086	2.68047E-05	0	•	0.000735403	0.002080685	4.661286-05		
	Inhalation Reference Dose	RfD _{rah}	mg/kg-d	•		.57E-04	571E-04	·	•	1 40E-01	1 145-02	2.86E-02	- 1	
	Hozard Quotient	HQ	mg/kg-d				0 046943397							
	Total Hazard Index	HI	mg/kg-d										138-41	61
	202	_		C 0 / C10C 00	0.001	400040	A 0001 1 40 m							
ncidental ingestion of creek water	POE concentration POE concentration	<u>ح.</u> ح.	ug/l mg/m3	5.26519E-09 5.26519E-09			0.000154858			0.000841116			1	
	Water ingestion rate	IR	mg/ms I/d	3.203175-07	0001	~33Z0Z	UUU 134636	0.007212425	/ /JU425-U6	0.000541116	U.U.Z73365BZ	0.00023004	J	
	Exposure frequency	ik EF	d/y											
	Exposure duration	ãD .	у,										i i	
	Body weight	BW	kg											
	Averaging time carcinogens	AT _c	ď										4	
	Averaging time non-carcinogens	ATn _o	d											
	Average intake from ingestion carcinogens	la	mg/kg-d	1.8376-16	5.000	359F_1 1	5.40294E-12	2 514385-10	2.69711E-13	2.93462E-11	1.02354E-09	1.133935-11		
	Ingestion Concer Slope Factor	ĊSF ₀	kg-d/mg	7.30E-01	400	00/L-11	G/102/4L-12	7 00E+00	1 205-01	5,406-01	4 00E-01	7.20E-01		
	Risk	R	fraction	1.345-16				1.76E-09	3,24E-14		4 095-10	8.16E-12	l l	
	Total carcinogenic risk for exposure route	R _t	traction					== 0.		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			10000	,
	Average Intake from Ingestion non-carcinogens	L	mg/kg-d	5.35793E-16	1.45	DE1E 1A	1 57586E-11	2 220 455 10	7 0//ETE 19	8.5593E-11	2.98533E-09	2.202000.11		
	Ingestion Reference Dose	RfD.	mg/kg-d	3.33/731-19		006-02	5 00E-04	7,337430-10	3.006-02		3.00E-04	3.30728E-11 3.00E-03	1	
	Hazard Quotient	HQ	mg/kg-d		_	253E-09	3 151716-08		2.622196-11		9.95109E-06		i	
	Total Hazard Index	н	mg/kg-d								7.17.072.09		1.4566	
Dermal contact with creek water	POE concentration	C.	ug/l	5.26519E-09	0.001	433262	0 000154858	0.007212425	7 730475-04	0.000841116	0.029334583	0.000325004	1	
Demice Concer will Great water	event duration	tevent	hr .	01200 // 1 0 /	5.00	100202	V 000101000		7700-000	4.000041110	0.02700000	00000000		
	absorbed dose per event	Daevent	mg/cm2-ever	2.49869E-14	2.000	333E-10	2.52675E-12	5.27912E-11	1 93543E-11	1.04633E-10	1 06659E-09	4 46083E-12		
	Event trequency	EV	events/day										1	
	Exposure duration	£D.	y										1	
	Exposure frequency	₽Ŧ	d/y											
	Skin surface area	SA	cm2										ı	
	Body weight	BW AT	kg d/y										ı	
	Averaging time Averaging time non-carcinogens	Aīn _e	d/y										l	
		-												
	Absorbed dose for corcinogens	DAD _e CSF _{our}	mg/kg-d	3.138426-13	2.51	624E-09	3.17365E-11	6-6307E-10			1 33966E-08		1	
	Dermal Cancer Slope Factor	R.	kg-d/mg fraction	2.30E-01 7.22E-14				1.80E+00 1 19E-09	1.20E-01 2.92E-11	5.40E-01 7.10E-10	6.00E-02 8.04E-10	7 20E-01 4.03E-11	ı	
	risk Total carcinogenic risk for exposure route	R _i	fraction	1.222-14				1 172-07	Z,72E-11	7. IQE-10	OUAE-10	4.030-11	1.995-08	
												,	7	
	Absorbed dose for non-carcinogens	DAD _{RO}	mg/kg-d	9 15373E-13		9026-09	9.25649E-11	1 93395E-09			3.90735E-08		ļ	
	Dermal Reference Dose	RfD _{der} HQ	mg/kg-d			2.006-02	5 00E-04		3 005-02		4 506-05	3.00E-03	1	
	Hazard Quotient Total Hazard Index	HI	mg/kg-d mg/kg-d		3 66	951E-07	1.8513E-07		2.36342E-08	3833156-07	0.000868301	5.44727E-08	1.665-03	
	(OCC) - CEDITO HOUSE												upc us	
rcinogenic risk - all routes (detected													5 87E-03	
rcinogenic risk - all routes (undetec		Circo Bil	Imadia -	A AAF AF		AAE. AF	** A FAF. F*	- PAAFF.	/ TAP AP	F M 10 M T	A 198 A 1		1 82E-03	
TAL CARCINOGENIC RISK - ALL ROU		Sum Ri	fraction	3.00E-05	0	00E+00	0 00E+00	5 03E-04	6 13E-05	5 74E-04	3 45E-04	2.925-06	7 70E-03	
on-Carcinogenic risk - all routes (det on-Carcinogenic risk - all routes (und													4 65E+01 6.14E+00	
" Carlos valles un seu - de sentes fosse	INDEX - ALL ROUTES	Sum HI	fraction	0	0.293								U. 1-72 - UU	

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TABLE 7-27
RME RISK CALCULATIONS FOR ADULT RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A)
Missouri Blockic Works, Cape Ghardeau

	 									-				Che	emicals of Pote	entral Concern	1							
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbol	Units	Non Contaminant- Specific Parameters	1,1,2,2-Tetrachloroethane	1,1,2-Trichlorcethane	1 1-Okthloroethane	Total 1,2 Dichloroethene	1 2 4 Trichlorobergene	1,2-Dichloroethane	1 2-Dichloropropane	1,3-Dichlorobenzene	1 4-Dichlarobenzene	2.4,6-Trichlorophenol	2 4-Dinitrototuene	2 6-Diritrotolvene	2-Chtorophenol	3 3-Dichloroberzidine	4.6-Dhritto-2-Methyl Phenol	Aroctor-1016	
Groundwater	Air	Indoor alf	Vapour intrusion - intralation	POE concentration POE concentration Inhabition rate Exposure time Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Com Com IR ET ED BW AT _G ATn _e	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.83 24 350 24 70 25,550 8,740	7.59E-06 7.59E-09	9,30E-08 9,30E-08	2.27E-03 2.27E-06	7 425-03 7.425-06	4.09E-03 4.09E-06	1.92E-04 1 92E-07	1.06E-04 1.06E-07	8.90E-04 8.90E-06	6 16E-06							6.76E-08 6.76E-11	0.00E+
				Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _{lan} R R ₁	mg/kg-d kg-d/mg fraction fraction		7.10103E-10 2.03E-01 1 44E-10	8.70087E-09 5.70E-02 4.96E-10	2.12376E-07	6 94198E-07	3.82651E-07	1.79631E-08 9.10E-02 1.63E-09	9 917126-09	8.32664E-07	5.76316E-07 2.20E-02 1.27E-08	1 095-02	0	0	2.862876-08	0	0	6.3245E-12 4.00E-01 2.53E-12	4.00E+
				Average intake from inhalation non-carcinogens Inhalation Reference Dose Hazard Quotient Total Hazard Index	RfD _{Psh} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		2.071136-09	2 53775E-08	6.1943E-07	2.02475E-06	1 11607E-06 1 14E-03 0.000979005	1 405-03	2.89249E-08 1 14E-03 2.53727E-05	2.4286E-06	1.68092E-06 2.30E-01 7.30835E-06	0		0	6.35003F-08	0		1.84465E-11	
	Groundwater	Tap Water	ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging firme non-carcinogens	C., C., BR EF ED BW AT,, ATn,	ug/l mg/m3 Vd d/y y kg d	2 350 24 70 25,550 8,760	0.049115 0.049115	0 15444 0 15444	6.479 6.479	10.97 10 97	60.52 60.52	0.27144 0.27144	0.14508 0 14508	43.99 43.99	49 62 49 62		1,10916 1 10916	0.1411 D 1411	1,881 1,681		0.101365 0 101365	0.229 0.229	0.132 0.132
				Average Intake from Ingestion carcinogens Ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF _o R R,	mg/kg-d kg-d/mg fraction fraction		4.61354E-07 2.00E-01 9.23E-08	1.45071E-06 5.70E-02 8.27E-08	6.08595E-05	0.000103045	0.000568485	2.54973E-06 9 10E-02 2.32E-07	1.36279E-06 6.80E-02 9.27E-08	0.000413213	0 000466098 2.406-02 1 125-05	1 105-02	6.80E-01	6.70E+00	1.76689E-05	1.48222E-06 4.50E-01 6 67E-07	9 52157E-07	2.15108E-06 4.00E-01 8.60E-07	1.24762E 4.00E 4.99E
				Average intake from ingestion non-carcinogens ingestion Reference Dase Hazard Quotient Total Hazard Index	K RFD. HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		6.00E-02	4.00E-03	0.000177507 1 00E-01 0 001775068	1.00E-02	1 00E-02	2.00E-02	1.105-03	3.00E-02	3.00E-02	1 00E-04	3.03879E-05 2.00E-03 0.015193973	1.006-03	5 00€-03	4.32315E-06	2.77712E-06 1 00E-04 0 027771233	6.27397E-06 7.00E-05 0.08962818	3 6399E
			Dermal contact with top water	POE concentration	C.	ug/l		0.049115	0.15444	6.479	10 97	60.52	0.27144	0.14508	43.99	49.62	0 10241	1 10916	0.1411	1,881	0.157795	0 101365	0.229	0.132
				event duration closorbed dase per event Event frequency Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	tevent Dasven EV ED EF SA BW AT AIn	hr t mg/cm2-eve events/day y d/y cm2 kg d/y d/y d/y	0 58 1 24 350 18,000 70 25,550 8,760	6.91995E-10	1.61619E-09	5 68815E-08	1 08663E-07	8.89856E-06	1 482916-09	1.60454E-09	4 51893E-06	3.69637E-06	8.715245-09	7.65966E-09	0	2.3668F-08	7.11633E-09	7.758886-10	0	4 3233154
				Absorbed dose for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{der} R R _t	mg/kg-d kg-d/mg fraction fraction		5.85013E-08 2.005-01 1 175-08	5 705-02	4.80877E-06	9,186425-06	0 000752286	1.25366E-07 9.10E-02 1,14E-08	1.35648E-07 6.80E-02 9.22E-09	0.000382031	0.000312491 2 406-02 7.506-06	1.10E-02	8 00E-01	6 70E+00	2.00089E-06	6.01615E-07 4 50E-01 2.71E-07	6.55937E-08	0 4 005-01 0 00 E+ 00	3.65493E-0 4.00E-0 1.46E-0
				Absorbed dose for non-carcinogens Dermal Reference Dose Hazzard Quolient Total Hazard Index	DAD _{ec} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1.70629E-07 6.00E-02 2.84381E-06			1 00E-02	1.00E-02	2.00E-02	3.95641E-07 1 10E-03 0.000359673	3.00E-02	3.005-02	2.14896E-06 1.00E-04 0.021489623	2.00E-03			1.75471E-06	1.91315E-07 1 00E-04 0 001913149	7 00E-05 0	1.06602E-0
	Air	Indoor Air	Vapors from tap water	Concentration in top water Concentration in top water Vokatilization factor	C., C., VF	ug/l mg/m3 dimensionles	s 0.0005 y	0.049115 0.049115			10 97 10.97 y	60.52 60.52 y	0.27144 y	0.14508 0.14508 y	43.99 43.99 y	49.62 49 62 y		1 10916 1 10916			0.157795 0 157795	0.101365 0.101365	0 229 0 22 9	0 132 0 132
(only calculated fo	or COPC with He	enry's Law > 1e-5 atm.	m3/mol those with a "y"]	POE concentration inhalation rate Exposure time Exposure frequency Exposure duration Body weight Averaging time caramogens Averaging time non-carainogens	C _{u-tesp} IR ET ED BW AT _u ATn _u	mg/m3 m3/hr h/d d/y Y kg d	0.83 24 350 24 70 25,550 8,760	2.45575€-05	0.00007722	0.0032395	0.005485	0.03026	0 00013572	0.00007254	0.021995	0 02481	0	0	0	0.0009405	0	0	0.0001145	
				Average intake from inhalation carcinogens	Ļ	mg/kg-d		2.29754E-06	7.22453E-06	0.00030308	0 000513164	0.002831057	1.26977E-05	6.78668E-06	0.002057802	0.002321167	0	o	D	8.79915-05	0	0	1.07124E-05	

TABLE 7-27
RME RISK CALCULATIONS FOR ADULT RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A)
Missouri Bectric Works, Cape Girardoou

												Chemica	s of Potential C	oncem										eine word, Co	
Esposure Route	Parameter	Syrnbo	i Units	Arockar-1232	Arocker-1242	Aroclor-1248	Arocka-1254	Arockor-1260 (Filtered)	Велгаеле	Benzo(a) anthracene	Berzo (a) pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	bs(2-Chloroethyl) Ether	bs(2-Chlorotsopropyl) Ether	Bis (2-ethy/hexy) phithalatie)	Bromodichionomethane	Carbon Teltachloride	Chlorobenzene	Charadbramomethane	Chloroform	Diberzo(a.h)Anttracene	Diberzofuran	Hexachloro-1,3-Butadiene	Hexachicrobenzene
Vapour intrusion - inhalation	POE concentration POE concentration Inhalation rate Exposure firme Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Coda Coda IR ET ED BW ATo	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00E+00 0.00E+00	3.485-08 3.485-11	0.00E+00 0.00E+00	5.006-08 5 006-11	2.085-06 2.085-09	2.17E-03 2.17E-06	0.00E+00 0.00E+00	0.00€+00 0.00€+00	5.21E-08 5.21E-11	0.00E+00 0.00E+00	4.715-04 4.115-07	0.00E+00 0.00E+00	0.00E+00 0.00E+00	1.205-03 1.206-06	3.04E-05 3.04E-08	1.52E+00 1.52E-03	9.87E-05 9.87E-08	1.135-02 1.135-05	0 00E+00 0 00E+00			
	Average intake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for exposure route Average Intake from inhalation non-carcinogens inhalation Reference Dose	CSF _{inh} R R _t	mg/kg-d kg-d/mg fraction fraction mg/kg-d mg/kg-d	4.006-01 0.006+00	3.25581E-12 4.00E-01 1 30E-12 9.49611E-12	4.00E-01 0.00E+00	4.67789E-12 4.00E-01 1.87E-12 1.36438E-11	1 946E-10 4.00E-01 7.78E-11 5.67584E-10	8.57E-03	0 3.08E-01 0.00E+00	3.08E+00 0.00E+00	4.87436E-12 3.08E-01 1.50E-12 1.42169E-11	3.08E-01 0.00E+00	3.84522E-08 1 16E+00 4.46E-08 1.12152E-07	0			2.84415E-09 5.20E-02 1.48E-10 8.29545E-09	0 000414773 1 706-02	9.23415E-09 2.69329E-08	1.0572E-06 8.10E-02 8.56E-08 3.08351E-06	3 08E-01 0 00E+00	3.04063E-08 8.86849E-08	7.70E-02 6.39E-12	1.815-10
ingestion of tap water	Hazard Quotient Total Hazard Index POE concentration POE concentration Water Ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	HQH CC CR HE DW ATE	mg/kg-d mg/kg-d ug/i mg/m3 i/d d/y y kg d	0.1603 0 1603	0.0916 0.0916	0 0.5954 0.05954	0 10076 0.10076	4 122 4 122	6.90948E-05 75.73 75.73	0.65036 0 65036	0 60456 0 60456	0 922185 0 922185	0.5313 0.5313	5 616 5.616	0.81432 0.81432	109 92 109.92	234 234	0.04389 0 04389	2901.18 2901 18	0 19188 0 19188	12.168 12.168	0 49335 0.49335	0.7557 0.7557	0 68242 0.68242	
	Average intake from ingestion carcinogers ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient	L CSFs R R, RfDs HQ	mg/kg-d kg-d/mg traction fraction mg/kg-d mg/kg-d	1.50575E-06 4 00E-01 6.02E-07 4.39178E-06	8 60431E-07 4 00E-01 3.44E-07 2.50959E-06	4 00E-01 2.24E-07 1.63123E-06	9.46474E-07 4 00E-01 3 79E-07 2.76055E-06 2.00E-05 0 138027397	4.00E-01 1.55E-05	5.50E-02 3.91E-05	7 30E-01 4 46E-06	5.67884E-06 7 30E+00 4 15E-05 1 65633E-05	7 30E-01 6.32E-06	4 99048E-06 7.30E-02 3.64E-07 1 45562E-05	1 10E+00 5.80E-05	7.64919E-06 2.23101E-05 4.00E-02 0.000557753	1 405-02 1 455-05 0 003011507 2.006-02	6.20E-02 1.36E-06 6.41096E-05 2.00E-02	7.005-04	0.079484384 2.006-02	1.8024E-06 8 40E-02 1 51E-07 5.25699E-06 2.00E-02 0.000262849	0.00033337 1.00E-02	7.30E+00 3.38E-05	7.09855E-06 2.07041E-05 4.00E-03 0.005176027	7.80E-02 5.00E-07	1.02E-05 1.8571E-05 8.00E-04
Dermal contact with tap water	Total Hazard Index POE concentration event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carchagens	Cw tevent Doewer EV ED EF SA BW AT ATn.	mg/kg-d ug/l hr tr mg/cm2-ever events/day y d/y cm2 kg d/y d/y d	0 1603 5.21778E-08	0 0916 2 281886-07	0.05954 1 59109E-07	0 10076 4.27428E-07	4.122	7\$.73 1.28037E-06	0 65036 9.16736E-07	0 60456 1 46103E-06	0,922185 2,261525-06	0.5313 1.28432E-06	5.616 1.72638E-08	0.81432 8.77868E-08	109.92 1.8825E-05	234 2.13911E-08	0.04389 1 32811E-09	2901.18 0.00011633	0.19188 1.63014E-09	12.168 1.2333E-07	0.49335 1.85163E-06	0 7557 1.51142E-07	0.68242 1.84025E-07	
	Absorbed dose for carcinogens Dermal Cancer Stope Factor Risk Total carcinogenic risk for exposure route Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quotient Total Hazard Index	DAD _o CSF _{dar} R R _t DAD _{no} RfD _{dar} HQ	mg/kg-d kg-d/mg fraction fraction mg/kg-d mg/kg-d mg/kg-d	4.00E-01 1.76E-06	4.00E-01 7.72E-06	1.34511E-05 4.00E-01 5 38E-06 3 92325E-05	4.00E-01 1 45E-05	4 00E-01 3.69E-03 0 0269265	5.50E-02 5.95E-08	2.35E-01 1.82E-05	2.35E+00 2.90E-04	2.30E-02 4.40E-06	7 30E-02 7,93E-06	1 10E+00 1.61E-06	2 1646E-05 4 00E-02	1 40E-02 2.23E-05	6 208-02 1 126-07 5.274516-06 2.008-02	1 30E-01 1 46E-08 3.2748E-07 7 00E-04	0.02868423 6.20 6 -03	8.40E-02 1 16E-08	3 04101E-05 2.00E-03	7.30E+00 1 14E-03	3 72678E-05 4 00E-03	7.80E-02 1.21E-06 4.5376E-05	1 60E+00 4.76E-05 8.68542E-05 8.00E-04
Vapors from tap water 13/mol, those with a "Y"]	Concentration in top water Concentration in top water Volatilization factor POE concentration Inhalation rate Exposure time Exposure time Exposure duration Body weight Averaging time carchagens Averaging time non-carchagens	C. C. VF Co-top IR EF ED BW ATo	mg/kg-d ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d d	0.1603 0.1603 0	0.0916 0.0916 0.0000458	0 05954 0.05954 0	0 10076 0.10076 0.00005038	y	75.73 75.73 Y 0.037865	0 65036 0 65036 0	0 60456 0 60456 0	0.922185 0 922185 0 000461093	0.5313 0.5313 0.5313	5 616 5 616 0.002908	0.81432 0.81432 0	109.92 109.92 9	234 234 0.00117	0.04389 0.04389 0.000021945	2901.18 2901.16 7 1.45059	0.19188 0 19188 9 0.00009594	12.168 12.168 0.006084	0.49335 0.49335 0	0.7557 0.7557 9 0.00037785	0.68242 0.68242 y 0.00034121	0.67784 Y
	Average intake from inhalation carchogens	Ļ	mg/kg-d	0	4 28494E-06	0	4.71344E-06	0 000192822	0.003542563	0	0	4,31388E-05	0	0.00026271	0	0	0 000109463	2.053126-06	0.135713907	8.97593E-06	0 000569205	0	3 53508E-05	3 19228F-05	3.170865

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TABLE 7-27
RME RISK CALCULATIONS FOR ADULT RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A)
Missouri Bectile Works, Cape Girardeau

						Ch	emicals of Pate	ential Concern	· · · · · ·					_
Exposure Route	Parameter	Symbol	Units	ndeno(1,2,3-od)Pyrene	-methytnaphthalene	caphtholene	dirobenzene	diresed-n-propylemine	entachtorophenol	efractionefrene	richloroeithene	ftryl Chloride	P	
										E				_
Vapour intrusion - inhalation	POE concentration	C _{o-b}	ug/m3	0.006+00		2.75E-04	6.87E-06	0.00€+00	0.00E+00	1.315-03	2.506-02	9.36E-04		
	POE concentration	Can	mg/m3	0 00E+00		2.75E-07	6.87E-09	0.00E+00	0 00E+00	1.31E-06	2.506-05	9.365-07		
	inhalation rate	泉	m3/hr										- 1	
	Exposure time Exposure frequency	et Ef	h/d d/y										- 1	
	Exposure duration	ED :	y,										- 1	
	Body weight	BW	ka										1	
	Averaging time carcinogens	AT _c	ď											
	Averaging itme non-carcinogens	ATn.	d											
	Average intake from inhalation carcinogens	L L	mg/kg-d	0		2.57284E-08	6 42742E-10	0	0	1.225616-07	2.33894E-06	8.757E-08		
	Inhalation Cancer Stope Factor	CSF _{bb}	kg-d/mg	3.0BE-01					_	2 10E+00	2.00E-02		1	
	Risk	R	fraction	0.00E+00						2.575-07	4 68E-08	2.63E-09		
	Total carcinogenic risk for expasure route	R,	fraction									[A398-5	
	Average Intake from inholation non-carcinogens	6	mg/kg-d	0		7.50411E-08	1.87466E-09	0	0	3.57468E-07	6.82192E-06	2.554136-07	ļ	
	Inhalation Reference Dase	RfD _{mh}	mg/kg-d	-		8.57E-04	5.716-04	•	•	1 405-01	1 145-02	2.865-02	1	
	Hazard Quotient	HQ	mg/kg-d				3.28312E-06				0 000598414			
	Total Hazard Index	н	mg/kg-d									[1464	
Ingestion of tap water	POE concentration	C,	ug/l	0.5313		1,8183	0.19646	7,5816	4 14032	5.39	15.25	0.34164		
	POE concentration	c.	mg/m3	0 5313		1.8183	0.19646	7 5816	4 14032	5.39	15.25			
	Water ingestion rate	IR	Vd.					,						
	Exposure frequency	EF	d/y											
	Exposure duration	ED	У										- 1	
	Body weight	B₩	kg										- 1	
	Averaging time carcinogens	AT _o	d											
	Averaging time non-carcinogens	Aīn _e	d											
	Average intake from ingestion carcinogens	۱ ₆	mg/kg-d	4.99068E-06		1.70799E-05	1.84542E-06			5.06301E-05	0.000143249			
	Ingestion Cancer Slope Factor	CSF.	kg-d/mg	7,305-01				7 00E+00	1.20E-01	5 40E-01	2 00E-02		ı	
	Risk	R	fraction	3.64E-06				4.99E-04	4.67E-06	2.73E-05	2.86E-06	2.31E-06		
	Total carcinogenic risk for exposure route	R,	fraction									ŀ	7.966.04	
	Average intake from Ingestion non-carcinogens	l _a	mg/kg-d	1.45562E-05		4 98164E-05	5.38247E-06	0 000207715	0 000113433	0.000147671	0.000417808	0.00000936	ĺ	
	Ingestion Reference Dose	RfD.	mg/kg-d			2.00E-02	5.00E-04		3,00E-02	1,00E-02		3.006-03	- 1	
	Hazard Quotient Total Hazard Index	HQ HI	mg/kg-d			0 002490822	0 010764932		0.003781114	0.014767123	1.392694064	0.00312	- 3000.00	
	loral Hazara Index	- N	mg/kg-d									1	6,882+00	_
Dermal contact with tap water	POE concentration	C.	ug/l	0.6313		1.8183	0,19646	7,5816	4.14032	5.39	15 25	0.34164		
	event duration	tevent Daevent	hr mg/cm2-ever	1 267015 04		1 220475 07	1 /10225 00	0 01770E/0	£ 500005 h/	2 410705 07	2.84781E-07	2.010045.00		
	absorbed dose per event Event frequency	EV	events/day	1207012-00		1.3326/12/0/	1.010332-07	20:7775-00	3 302231-00	3.510/72-0/	2.04/012-07	2010042-07		
	Exposure duration	ED	y											
	Exposure frequency	EF	d/y										l	
	Skin surface area	SA	cm2										Į.	
	Body weight	BW	kg dh										l	
	Averaging time Averaging time non-carchagens	AT ATn _o	d/y d										}	
													- 1	
	Absorbed dose for carcinogens Dermal Cancer Slope Factor	DAD _e CSF _{der}	mg/kg-d kg-d/mg	0.000114789 2.305-01		1.12664E-05	1.36137E-07	2.38216E-06 1.80E+00	0.000471922 1.206-01	3.05257E-05 5.40E-01	2.40754E-05 3.00E-03	1.70673E-07 7.20E-01	\	
	Risk	R	fraction	2.64E-05				4,29E-06	5.66E-05	1.655-05		1 23E-07		
	Total carcinogenic risk for exposure route	Ř,	fraction	20,00				4,272.00	3.32.00	1,000	7.22,00	. 2,00-07	5.38E-03	
		DAD	marker -	0.000224001		2 70/225 65	3 97067E-07	10/30/504	0.00127444	0 000000 00	200000	4 077077 67		
	Absorbed dose for non-carcinogens Dermal Reference Dose	RfD _{cher}	mg/kg-d mg/kg-d	0.000334801	4 00E-03		5.00E-04	0 74/700-00	3.005-02	8.90332E-05 1.00E-02		4.97795E-07 3 00E-03	l	
	Hazard Quotient	HQ	mg/kg-d				0.000794134		0.045881353	0.008903317	1.560445485			
	Total Hazard Index	н	mg/kg-d										1.355+01	_
Vapors from tap water	Concentration in top water	C.	ug/l	0.5313		1.8183	0.19646	7 5816	4,14032	5.39	15.25			
	Concentration in top water	C.	mg/m3	0,5313		1.8183	0 19646	7,5816	4 14032	5.39	15.25		J	
	Volatilization factor	VF	dimensionless	y			у	_	_			y		
not those with a "Y")	POE concentration	Cortos	mg/m3	0		0.00090915	0.00009823	0	0	0.002695	0 007625	0.00017082	ļ	
	Inhalation rate Proper ve time	ir et	m3/Nr										l	
	Exposure time Exposure frequency	EF	h/d d/y										ŀ	
	Exposure duration	ED	ωy y										l	
	Body weight	BW	kg											
	Averaging time carcinogens	AT _o	ď											
	Averaging time non-carcinogens	ATn _o	d										l	
	Average latete from lab -t-tt		malke d			g enege ev	0 100105 04	0	^	0.000253139	0.000713378	1 509155 05		
	Average intake from inhalation carcinogens	L.	mg/kg-d	0		8.50585-05	9.19018E-06	U	0	0 000252138	0.000/133/8	1.070105-05	ı	

TABLE 7-27 RME RISK CALCULATIONS FOR ADULT RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A) Missouri Blockic Works, Cape Girardeau

														Che	emicals of Pote	entral Concern	1							
	Exposure			P	D b		Non Contaminant- Specific	1.2.Tefrachlorcelhane	,2-frichloroethane	-Dichlaroethane	tal 1.2 Dichloroethene	24 Trichlorobergene	2-Dichloroefhane	-Dichloropropane	-Dichlorobenzene	-Dichloroberzana	.6-Tricthorophenol	-Dinitrototvene	-Diritrotokene	Chlorophenol	- Dichloroberzicine	-Divitro-2-Methyl Phenol	ockar-1016	
e Medium	Medium	Exposure Point	Exposure Route	Parameter Inhalation Cancer Slope Factor	Symbo CSF _{Int}	kg-d/mg	Parameters .	2.03E-01	5.70E-02	<u>-</u>			9 10E-02			2.205.00	- 2	<u> </u>			3.3		4000.01	4
				Risk	R	fraction		4.66E-07	4.12E-07				1.16E-06			2.20E-02 5.11E-05							4 00E-01 4.28E-06	
				Total carcinogenic risk for exposure route	R,	fraction																		
				Average intake from inhalation non-carcinogens	6	mg/kg-d		6.70117E-06	2.10715E-05	0.000883964	0 001496729	0 008257249			0.006001923		0	0	0	0 000256641	0	0	3.12444E-05	
				Inhalation Reference Dose Hazard Guotient	RfD _{inh} HQ	mg/kg-d						1 146-03		1 14E-03		2.30E-01								
				Total Hazard Index	Hi	mg/kg-d mg/kg-d						7 243201134	0 026453448	0.01/3635/6		0.029435092				-				
								A 271 AFF AF	0.5004.4000	0.00510000	A 14740404													
	Surface Water	Creek	Incidental ingestion of creek water	POE concentration POE concentration	C., C.,	ug/l mg/m3		3.87145E-05 3.87145E-05				0.003415705						0.001055151						
				Water ingestion rate	IP.	ing/ins l/d	0.05	3.07 1435-03	U-UUU14072	0.00510/025	U. 100404231	0.003415705	0 000258223	0.000138018	0.2//239592	0.332/33263	8.0723YE-05	0.001055151	0.0001112	0 001482685	0 000124381	7.99002E-05	4.276E-07	2.
				Exposure frequency	EF	d/y	52																	
				Exposure duration	ED	y	24																	
				Body weight	BW	kg	70																	
				Averaging time carcinogens	AT _o	d	25.550																	
				Averaging time non-carcinogens	Aīn _a	d	8,760																	
				Average intake from ingestion carcinogens	l _a	mg/kg-d				1.78182E-10	5 87834E-09	1.19172E-10			9 67277E-09				3.87972E-12	5 17302E-11		2.78768E-12	1.49188E-14	, 8
				Ingestion Cancer Slope Factor	CSF.	kg-d/mg		2.00E-01	5.70E-02				9 10E-02	6.80E-02		2.406-02			6 70€+00		4 50E-01		4 00E-01	
				Risk	R	fraction		2.70E-13	2.92E-13				8.20E-13	3.27E-13		2.79 E -10	3 10E-14	2.50E-11	2 605-11		1 95E-12		5 97E-15	
				Total carcinogenic risk for exposure route	R,	fraction																		
				Average intake from ingestion non-carcinogens	ام ا	mg/kg-d						3,47586E-10					8.21457E-12				1.26571E-11			. 2
				Ingestion Reference Dase	RfD.	mg/kg-d		6.00E-02						1 105-03		3.00E-02						1.00E-04		
				Hazard Quotient Total Hazard Index	HQ HI	mg/kg-d mg/kg-d		6.566078-11	3 /3/691:-09	5.19697E-09	1.714525-06	3,475865-08	1.313855-09	1.276785-08	9.404085-07	1.12871E-06	8 21457E-08	5.36867E-08	1.13159E-08	3 0176E-08		8.13075E-08	6.21616E-10	
			D	POE concentration	C,			2.021.450.05	0.00014602	0.005107005	0.1/0404051	0.00041.6306	0.000010000	0.000100012	0.922020500	0.790750050	0.070707.07	0.001055151	0.0001110	0.001 /00/05		7.00000 Or	4 have 42	
			Dermal contact with creek water	event duration	tevent	ug/l	2	3.8/1400-05	0 00014672	0.005107025	U.160404251	0 003415705	0 000256223	0.000138016	0.2//23/392	0.332/33253	8.07,2376-05	0.001055161	0.0001112	0.001482685	0,000124381	7 99002E-05	4,27 6 5-07	2
				absorbed dose per event	Daever	nt mg/cm2-event	-	1.012 09E -12	2,999415-12	9 41817E-11	3.521195-09	9.3261SE-10	2.97547E-12	3.08949F-12	5.39477E-08	4,700135-08	1.27568E-11	1,35315-11	0	3.661435-11	1,04164E-11	1.135495-12	n	,
				Event frequency	EV	events/day	1					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					TILLY GROUND TO	DOG TE T	•	0.001-101-11	ID-TIDIL II	1,100071-12	·	
				Exposure duration	ED	y	24																	
				Exposure frequency	EF SA	ďγ	52																	
				Skin surface area Body weight	SA BW	cm2 kg	18 000 70																	
				Averaging time	AT	ď/y	25,550																	
				Averaging time non-carcinogens	ATn _o	ď	8.760																	
				Absorbed dose for carcinogens	DAD	mg/kg-d		1.27222E-11	3.76733E-11	1.182955-09	4.4227E-08	1.171395-08	3.73727E-11	3.88048E-11	6.77847E-07	5.90347E-07	1.402285-10	1.69953E-10	0	4.59884F-10	1.30832E-10	1.42646E-11	0) 1
				Dermal Cancer Slope Factor	CSF	kg-d/mg		2.00E-01					9.10E-02	6.80E-02		2.40E-02					4 50E-01		4.00E-01	
				Risk	R	fraction		2.545-12	2.156-12				3 406-12	2.64E-12		1.42E-08	1.76E-12				5.89E-11		0.00E+00	
				Total carcinogenic risk for exposure route	R _t	fraction																		
				Absorbed dose for non-carcinogens	DAD _{no}	mg/kg-d		3.71064E-11		3.45026E-09	1.28995E-07	3.41655E-08		1 13181E-10		1 72185E-04	4 67332E-10	4.95697E-10	o	1.341335-09	3.81594E-10	4,16049E-11	0	5.
				Dermal Reference Dase	RfD _{cler}	mg/kg-d		6 00E-02						1 105-03		3 00E-02						1.006-04	7.00E-05	,
				Hazard Quofient Total Hazard Index	HQ HI	mg/kg-d mg/kg-d		6.1844E-10	2 747015-08	3.45026E-08	1.28995E-05	3 416555-06	5.45018E-09	1.028916-07	6.59018E-05	5.73949E-05	4.67332E-06	2.478486-07	0	2 68266E-07		4.16049E-07	0	
				· · · · · · · · · · · · · · · · · · ·											•									
			Carcinogenic risk - all routes (detected Carcinogenic risk - all routes (undetec																					
			Carcinogenic risk - all routes (undetec TOTAL CARCINOGENIC RISK - ALL ROU	ted organics) IIS	Sum Rt	fraction		5 71E-07	5 03E-07	0 00E+00	0 00E+00	0 00E+00	1 40E-06	1 02E-07	0 00E+00	6 98E-05	1 87E-08	7 60E-06	8.88E-06	0.005+00	9 38E-07	0 00€+00	5 15E-06	
			Carcinogenic risk - all routes (undetec	ted organics) TES ected organics)	Sum Rt	fraction		5 71E-07	5 03E-07	0 00E+00	0 00E+00	0 00E+00	1 405-06	1 025-07	0 00E+00	6 98E-05	1 87E-08	7 60E-06	8.88E-06	0 00E+00	9 38E-07	0 00E+00	5 15E-06	_

Notes

1- ug/1 = micrograms per UBer
2- ug/m3 = micrograms per cubic meter
3- tv/d = hours per day
4- t/d = Bles per day
5- d/y = days per year
6- y = year
7- kg = Magram
8- d = day
9- hr = hour
10- mg/kg-d = milliarams per Magram per

10-mg/kg-d = miligrams per klagram per day 11-kg-d/mg = klagrams per day per miligram 12-cm2 = square centimeter 13- m3/hr = cubic meter per hour

15- mg/m3 = milligrams per cubic meter
15- mg/cm2-eveni = milligrams per square centimeter per event
16- mg/cm3-eveni = milligrams per cubic centimeter per event

TABLE 7-27
RME RISK CALCULATIONS FOR ADULT RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A)
Missouri Bectric Works, Cape Girardeau

Part Control Contr													Chemico	s of Potential (Concern											
Pack Pack	Exposure Route	Porameter		i Units	Arockor-1232	Aroclor-1242	Arector-1248	Arocka-1254	Arocker-1260 (Filtered)	Sercone	Berzo(a) critracene	Berazo(a) pyrene	Benzo(b)fluoranthene	Berzolkj fluoromfrene	bs(2-Chlaroethyl) Ether	ba(2-Chlorobopropy)) Effher	Bis (2-ethyfhexyl phthodole)	Bromodichloromethane	Carbon Tetrachloride	Charoberzene	Charodiscomethane	Chloroform	Dibenzo(a.h)Anthracene	Dibenzofuran	Hexachtoro-1,3-Butadiene	
Processor Proc			C2FPW																							
Process Proc		N-M	R _t		UJUETUU	7712-00	5.00E+00	1.0712-06	771203	7.67 [-03	0.002-00	U OUE-OU	120500	0.000=00	3.050-04				1,075-07			4.61E-05	0 000=00		2.466-06	5 1 3
PC conversation C		Inhalation Reference Dose Hazard Quotient	HQ	mg/kg-d rng/kg-d	0	1.24978E-05	C	1.37475E-05	0 000562399	8 57E-03	0	0	0.000125821	0	0 000766238	D	0	0 000319266	5.98828E-06	1 706-02	2.61798E-05	0 001660182	0	0 000103106	9.31083E-05	9.2483
Part of the following services and the services of the service	cidental ingestion of creek water	POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time corcinogens	C., BR EF ED BW AT.,	mg/m3 Vd d/y y kg d																						
Page 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Ingestion Cancer Slope Factor Risk	L CSF。 R R	kg-d/mg fraction	4.00E-01	4.006-01	4 00E-01	4 00E-01	4 00E-01	5.50E-02	7.30E-01	7.30E+00	7.30E-01	7.30E-02	1 10E+00		1 40E-02	6.20E-02	1 30E-01	4 74346E-08	8.40E-02		7,30E+00	4 92282E-14	7 80E-02	1 60
event duration obtorbed date per verit programs of verit programs of verit programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) programs (V verificity) produced state per verit programs (V verificity) produced state per verit programs (V verificity) produced state per verificity programs (V verificity) program		Ingestion Reference Dose Hazard Quotient	HQ	mg/kg-d mg/kg-d	3.04569E-14	1.74039E-14	1.131255-14	2 00E-05	7,831 76 E-13	4 00E-03	1 235688-13	1.14866E-13	9.29983E-16	5.35793E-16	5 43663E-10	4 00E-02	2 00E-02	2.00E-02	7.00E-04	2.00E-02	2.00E-02	1 005-02	4.97522E-16	4 006-03	2 00E-04	80
Controled does per event Implications per event Implications per event Implications Impl	ermal contact with creek water			-	2.99297E-07	1.71 027E-07	1 11168E-07	1.88136-07	7.69621E-06	0.003648704	1 21429E-06	1.12878E-06	9 13887E-09	5 26519E-09	0.005342537	0.000774668	0.000205232	0 002226	3.4596E-05	1.35956262	0.000182537	0.011575497	4.88911E-09	1,410976-06	1.27415E-06	4.0064
Demical Concert Slope Foctor CSF _{ear} kg-d/mg 4,00E-01 4,00E-01 4,00E-01 4,00E-01 4,00E-01 5,0E-02 2,3SE-01 2,3SE-01 2,3SE-01 2,3SE-01 1,0E-00 1,40E-02 1,0DE-01 1,0D		absorbed dose per event Event frequency Exposure duration Exposure frequency Sich surface area Body weight Averaging time	Doewen EV ED EF SA BW AT	if mg/cm2-ever events/day y d/y cm2 kg	- 1.80907E-13	791158E-13	5 516S3E-13	1 48195E-12	3.78617E-10	1.36534E-10	3.178445-12	5.06557E-12	4 16175E-14	2 36346E-14	3 176335-11	1.55078E-10	6.52686E-11	3.778715-11	1.99165E-12	1.077528-07	2.87975-12	2.34503E-10	3.40744E-14	5.24028E-13	6.380385-13	3,86609
Dermal Reference Dose RPD _{der} mg/kg-d 2.00E-05 4.00E-03 2.00E-04 5.20E-05 4.00E-03 2.00E-03		Dermal Cancer Slope Factor Risk	CSF _{ober} R	kg-d/mg fraction	4.00E-01	4.00E-01	4.00E-01	4 00E-01	4 00E-01	5,506-02	2.35E-01	2.35E+00	2.30E-02	7 30E-02	1 10E+00	1 94782E-09	1 40E-02	6 20E-02	1.30E-01	1.35339E-06	8.40£-02		7.306+00	6.581925-12	7 80E-02	1 60
reinogenic risk - all routes (undetected organics) AL CARCINOGENIC RSK - ALL ROUTES Sum R1 fraction 2:375-06 9 775-06 5.605-06 1 675-05 3 795-03 1 425-04 2:275-05 3:325-04 2:405-05 8 295-06 3:645-04 0 1005-100 3 675-05 1 475-06 1 755-07 0 1005-100 1 635-07 4 625-05 1 185-03 0 1005-100 4 175-06 - Carcinogenic risk - all routes (undetected arganics) - Carcinogenic risk - all routes (undetected arganics)		Dermal Reference Dose Hazard Quotient	RfD _{oler} HQ	mg/kg-d mg/kg-d	6.62737E-12	2.89833 E-11	2.02093E-11	2.006-05		4 006-03	1 16439E-10	1.85572E-10	1 524625-12	8.65833E-13	1 16362E-09	4.00E-02	3.80E-03	2.00E-02	7.00E-04	6.20E-03	2.00€-02	2.00E-03	1,24828E-12	4 00E-03	2 005-04	8 00
n-Carchrogenic fisk - all routes (detected organics) n-Carchrogenic fisk - all routes (undetected organics)	rcinogenic risk - all routes (undetec	cted organics)	Sum Rf	fraction	2.375-06	9 77E-06	5.60E-06	1 67E-05	3 79E-03	1 425-04	2.27E-05	3,325-04	2.40E-05	8 29E-06	3.64E-04	0 00E+00	3 67E-05	1 475-06	1 755-07	0 00E+00	1 63E-07	4 62E-05	1 185-03	0.00€+00	4 17E-06	109
	n-Carcinogenic risk - ali routes (unc	detected organics)																								

TABLE 7-27
RME RISK CALCULATIONS FOR ADULT RESIDENT (MODERATE TCE SLOPE FACTOR, WELL A)
Missoort Becktic Works, Cape Ghardeau

					C	emicals of Pol	ential Concern	1					
				cdPyrene	thatene		pylamine	Du-	er.e	•			
				5,	† \$	§	Ě	ğ	*	<u>ع</u>	ۇ	ı	
				2	Ę į	Ž	£	윭	ş	3	Chords	- 1	
	A	A 11		Ě		Đ.	8	ğ	2	Ę	¥	2	
Exposure Route	Parameter	Symbol CSF _M	Units	3.08E-01	<u>i</u> ž	<u></u>	_		<u> </u>	<u>¥</u>	<u>.</u>		
	Inhalation Cancer Slope Factor Risk	R	kg-d/mg fraction	0.00E+00					2.10E+00 5.29E-04	2.00E-02 1 43E-05	3.00E-02 4.79E-07		
	Total carcinogenic risk for exposure route	R,	traction								[255-02	16
	Average Intake from Inhalation non-carcinogens	L L	mg/kg-d	o	0 000248086	2.68047E-05	0	•	0 000735403	0 002080685	4 66128E-05		
	Inhalation Reference Dase	RfD _{mh}	mg/kg-d	v	8 57E-04	571E-04	U	U	1 40E-01	1 145-02	2.86E-02		
	Hazard Quatient	HQ	mg/kg-d			0 046943397				0.182516222			
	Total Hazard Index	HI	mg/kg-d									LABOUR	6
acidental ingestion of creek water	POE concentration	Ç.,	ug/l	5.265196-09						0.029336582		- 1	
	POE concentration	C₌. IR	mg/m3 Vd	5.26519E-09	9 00 1433262	0 000154858	0 00/212425	7 /3042E-06	0.000841116	0.029336582	0 000325004	- 1	
	Water Ingestion rate Exposure frequency	EF	d/y									- 1	
	Exposure duration	ED	ω <i>γ</i>									- 1	
	Body weight	BW	kg									l	
	Averaging time carcinogens	AT _o	d									l	
	Averaging time non-carcinogens	Aîn _e	d									- 1	
	Average Intake from Ingestion carcinogens	l _a	mg/kg-d	1 8375-16	5,000595-11	5.40294F-12	2.51638E-10	2.69711E-13	2.93462E-11	1.02354E-09	1,13393E-11		
	Ingestion Cancer Slope Factor	ĊSF.	ka-d/ma	7.30E-01	200-00-72 TT	B-1027-12 12	7.00E+00	1,205-01	5.405-01	2.00E-02	7.206-01	- 1	
	Risk	R	fraction	1.345-16			1.76E-09	3.246-14	1 586-11	2.05E-11	8.165-12	- 1	
	Total carcinogenic risk for exposure route	R _t	fraction									2.365-09	(
	Average intake from ingestion non-carcinogens	L .	mg/kg-d	5,35793E-16	1 45851E-10	1.575865-11	7 33945F-10	7.86657E-13	8.5593E-11	2.98533E-09	3.307286-11	- 1	
	Ingestion Reference Dose	R/D _o	mg/kg-d	G	2.006-02	5 00E-04	120/102 10	3.006-02	1 00E-02	3.00E-04	3.00E-03	- 1	
	Hazard Quatent	HQ	mg/kg-d			3 15171E-08		2.62219E-11		9 95109E-06	1.10243E-08	- 1	
	Total Hazard Index	н	mg/kg-d									7186-86	
Dermal contact with creek water	POE concentration	C _*	ug/l	5.26519E-09	0.001433262	0 000154858	0.007212425	7.730425-06	0.000841116	0.029336582	0.000325004	- 1	
	event duration	tevent	hr		5.24	• • • • • • • • • • • • • • • • • • • •	2 00.0	,	• • • • • • • • • • • • • • • • • • • •		0.000		
	absorbed dose per event	Daevent		2.49869E-14	2.003336-10	2.52675E-12	5.27912E-11	1.93543E-11	1.04633E-10	1.06659E-09	4 46083E-12	- 1	
	Event frequency	EV	events/day									1	
	Exposure duration	ED _	У										
	Exposure frequency	EF.	d/y									- 1	
	Skin surface area Body weight	SA BW	cm2 ka									ı	
	Averaging time	AT .	ď/y									l	
	Averaging time non-carcinogens	ATn _e	ď										
	Absorbed close for carcinogens	DAD	mg/kg-d	3.13842E-13	2 814245.00	3 17365E-11	4 4307E-10	2.43095E-10	1.31422E-09	1,33966E-08	5.60291E-11		
	Dermal Cancer Slope Factor	CSF _{der}	kg-d/mg	2.30E-01	2.0296707	J 1/000E-11	1.805+00	1,205-01	5.406-01	3.00E-03	7 205-01	- 1	
	Risk	R.	fraction	7.22E-14			1 195-09	2.925-11	7 10E-10		4 03E-11	j	
	Total carcinogenic risk for exposure route	R,	fraction				, 0,				- Jane 11	1.916-06	(
		D4D		A 1/2770F 12		0.05/105 ***	1 500000 00	7 0000T :-	A 0001 FF 00	0.007077.55	. /5.1105	_ 1	
	Absorbed dose for non-carcinogens	DAD _{no}	mg/kg-d	9 15373E-13	7 339025-09		1.93395E-09	7.09027E-10			1 63418E-10	l	
	Dermal Reference Dose	RfD _{cter} HQ	mg/kg-d		2.005-02	5 005-04		3.00E-02 2.36342E-08	1 005-02		3.00E-03 5 44727E-08	İ	
	Hazard Quoffent Total Hazard Index	HI	mg/kg-d mg/kg-d		3 66951E-07	1,8513E-07		CONTENS	3,0331300/	0.000868301	3 44/2/048	7.665-08	
			· · · · · · · ·										
rcinogenic risk - all routes (detected rcinogenic risk - all routes (undetec	d organics)											5.54E-03	
		5 BI	fraction	3.00E-05	0 00E+00	0 00E+00	5 03E-04	6 13E-05	5 74E-04		A KAP A I	1 82E-03	
	TES .									1 775-04			
AL CARCINOGENIC RISK - ALL ROU		Sum Rt	ridenon	3.005-05	0000-00	0 001+00	3 030-04	8 131-03	3 /45-04	1 73E-05	2.925-06	7.37E-03	
	ected organics)	SUM KI	iraciion	3.000-03		0 001+00	3030-04	8 135-03	3 /45-04	1 73E-05	2925-06	4 65E+01 6 14E+00	

TABLE 7-28
RME RISK CALCULATIONS FOR ADULT RESIDENT (LOW TCE SLOPE FACTOR, WELL A)
Missouri Bectric Works, Cape Ghardeau

				·										Che	micals of Pote	ntial Concern					<u> </u>	HISSOUT DEC	mc Hons, Cq	
														G								2		
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter	Symbo	ol Units	Non Contaminant- Specific Parameters	1 1,2,2-Tetrachloroetha	1,1,2-frichloroethane	1,1-Dichlaroethane	Total 1,2 Dichloroetherw	1,2,4 Trichloroberzene	1 2-Dichloroethane	2-Dichloropropane	1,3-Dichlaroberzene	1 4-Dichlorobergene	2,4,6-Trichlorophenol	2,4-Diritrotoluene	2.6-Dinihotokuene	2-Chlorophenol	3 3-Dichloroberzidine	4.6-Dinitro-2-Methyl Phen	Araciar-1016	Arockor-1221
							-																	
Groundwater	Ar	Indoor air	Vapour intrusion - Inhalation	POE concentration POE concentration Inhigidator rate Exposure firme Exposure frequency Exposure charaction Body weight Averaging firme carcinogens Averaging firme non-carcinogens	Costs Costs IR ET EP ED BW ATG ATG	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.83 24 350 24 70 25.550 8.760	7 59E-06 7.59E-09	9.30E-05 9.30E-08	2.27E-03 2.27E-06	7.42E-03 7.42E-06	4.09E-03 4.09E-06	1.92E-04 1 92E-07	1.06E-04 1.06E-07	8.90E-03 8.90E-06	6.16E-06	0.00E+00 0.00E+00	0.00E+00 0.00E+00	0.00E+00 0.00E+00	3.06E-07	0.00E+00 0.00E+00		6.76E-08 6.76E-11	0 00E+00 0 00E+00
				Average infake from inhalation carcinogens inhalation Cancer Slope Factor Risk Total carcinogenic risk for expasure route	CSF _{beh} R R ₁	mg/kg-d kg-d/mg fraction fraction		7 10103E-10 2.03E-01 1.44E-10	8 70087E-09 5.70E-02 4 96E-10	2.12376E-07	6 94198E-07	3.82651E-07	1.79631E-08 9.10E-02 1,63E-09	9917125-09	8.32664E-07	5.76316E-07 2.20E-02 1.27E-08	0 1 09E-02 0.00 E+ 00	0	0	2.86287E-08	0	0	6.3245E-12 4 00E-01 2.53E-12	0 4 006-01 0,006+00
				Average intake from Inhakation non-carcinogens Inhakation Reference Dose Hazard Quotient Total Hazard Index	le RfD _{ech} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		2.071136-09	2.53775E-08	6.1943E-07		1.11607E-06 1 14E-03 0.000979005	5.23923E-08 1 40E-03 3 74231E-05	2.89249E-08 1.14E-03 2.53727E-05	2.4286E-06	1.68092E-06 2.30E-01 7.30835E-06	0	0	0	8.35003E-08	0	0	1.84465E-11	0
	Groundwater	Top Water	ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cw Cw IR EF ED BW AT _a	ug/l mg/m3 l/d d/y y kg d	2 350 24 70 25,550 8,760	0.049115 0.049115	0.15444 0.15444	6.479 6.479	10.97 10 97	60.52 60.52	0.27144 0.27144	0.14508 0.14508	43.99 43.99	49.62 49.62	0.10241 0.10241	1 10916 1 10916	0 1411 0 1413	1.881 1.881	0.157 7 95 0.157 79 5	0 101365 0 101365	0 229 0.229	0.13262 0 13262
				Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	CSF _o R R _t	mg/kg-d kg-d/mg fraction fraction		4 61354E-07 2.00E-01 9.23E-08	1 45071E-06 5.70E-02 8.27E-08	6 08595E-05	0 000103045	0.000568485	2.54973E-06 9 10E-02 2.32E-07	1.36279E-06 6.80E-02 9.27E-08	0.000413213	0.000466098 2.40E-02 1.12E-05	9.61973E-07 1 10E-02 1 06E-08	1.04187E-05 6.80E-01 7.08E-06	1.3254E-06 6 70E+00 8.88E-06	1.76689E-05	1.48222E-06 4 50E-01 6 67E-07	9.52157E-07	2.15108E-06 4.00E-01 8.60E-07	1 24762E-06 4.00E-01 4.99E-07
				Average intake from ingestion non-carcinogens ingestion Reference Dose Hazard Quotient Total Hazard Index	RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1.34562E-06 6.00E-02 2.24269E-05	4.00E-03	0.000177507 1.00E-01 0.001775068	1.00E-02	1.00E-02	2.00E-02	1 105-03	0.001205205 3.00E-02 0.040173516	3.00E-02	1 00E-04	2.00E-03	1.00E-03	5 00E-03	4.32315E-06	2.77712E-06 1 00E-04 0 027771233	6.27397E-06 7 00E-05 0.08962818	3.63895-06
			Dermal contact with tap water	POE concentration	C.,	υ g /l		0 049115	0.15444	6.479	10 97	60.52	0.27144	0 14508	43.99	49.62	0 10241	1.10916	0 1411	1.881	0.157795	0 101365	0 229	0 13282
				event duration absorbed dose per event Event frequency Exposure duration Exposure frequency Skin surface area Body weight Averaging time Averaging time non-carcinogens	tevent Daever EV ED EF SA BW AT ATn _o		0.58 1 1 24 350 18.000 70 25.550 8.760	6.91995E-10	1.61619E-09	5 6881\$E-08	1.08663E-07	8.89856E-06	1 482915-09	1.60454E-09	4 51893E-06	3.69637E-06	8.715245-09	7.65966E-09	0	2.3668F-08	7 116336-09	7.75888E-10	0	4 32331E-08
				Absorbed dose for carcinogens Dermal Cancer Siope Factor Risk Total carcinogenic risk for exposure route	DAD _o CSF _{our} R R _i	mg/kg-d kg-d/mg fraction fraction		5.85013E-08 2.00E-01 1 17E-08	5.705-02	4 80877E-06	9 186426-06	0 000752286	1.25366E-07 9.10E-02 1 14E-08	1.35648E-07 6 80E-02 9.22E-09	0.000382031	0.000312491 2.40E-02 7.50E-06	7.36787E-07 1 10E-02 8.10E-09	6.47549E-07 8 00E-01 5.18E-07	0 6 70E+00 0.00E+00	2 00089E-06	6.01615E-07 4 50E-01 2.71E-07	6.55937E-08	0 4 00E-01 0 00E+00	3.65493E-06 4.00E-01 1.46E-06
				Absorbed dase for non-carcinogens Dermal Reference Dose Hazard Quoffent Total Hazard Index	DAD _{ec} RfD _{der} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d		1 70629E-07 6.00E-02 2.84381E-06		1.40256E-05 1 00E-01 0.000140256	1 006-02	1 00E-02	2.005-02	3.95641E-07 1 10E-03 0.000359673	0.001114257 3.00E-02 0.037141891	3.00E-02	2.14896E-06 1.00E-04 0.021489623	1.88868E-06 2.00E-03 0.000944342	1 00E-03	5.83594E-06 5.00E-03 0.001167187	1.75471E-06	1 91315E-07 1 00E-04 0.001913149	7 00E-05 0	1.068025-05
(only calculated for	Air or COPC with He	Indoor Air enry's Law > 1e-5 afm.n	Vapors from tap water	Concentration in tap water Concentration in tap water Volatilization factor POE concentration inhalation rate Exposure time Exposure trequency Exposure duration Body weight Averaging time carcinogens	C. VF C. IR ET EF ED BW AT.	ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d	0 0005 y 0.83 24 350 24 70 25.550			y ,	10 97 10 97 7 0.00\$485	60.52 60.52 0.03026	0.27144 0 27144 7 0.00013572	0.14508 0.14508 0.00007254	43.99 43.99 / 0.021995	47.62 49.62 0.02481	0.10241 0.10241 0	1 10916 1 10916 0	0 1411 0 1411 0	1.881 1.881 , 0.0009405	0.157795 0.157795 0	0.101365 0.101365 0	0 229 0.229 0 0001145	0 13282 0 13282 0
				Averaging time non-carcinogens Average intake from inhalation carcinogens	Aīn _e	d mg/kg-d	8,760	2.29754E-06	7 22453E-06	0 00030308	0 000513164	0 002831057	1.26977E-05	6.78668E-06	0.002057802	0.002321167	0	0	0	8,7991E-05	0	0	1.07124E-05	0

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TABLE 7-28
RME RISK CALCULATIONS FOR ADULT RESIDENT (LOW TCE SLOPE FACTOR, WELL A)

												Charitan	s of Potential												
												Criemicu	s or rotemics	Joncem	¥	7									
Exposure Route	Parameter	Symbo	u Umits	Arockar-1232	Aroclor-1242	Arocka-1248	Aroclor-1254	Aroclor-1260 (Filtered)	Berzene	Benzo(a) criftracene	Benzo (a) pynene	Berzo(b)fluoranthene	Berzo(k) fluoranthene	os(2-Choroethyl) Ether	ob(2-Chknoboprapy) Eff	38 (2-ethythexyl phthalah	Ramodichiaremethane	Carbon Tetrachtoride	Chloroberzene	Chlarodibromomethane	Okoofom	Oberzo(a.h)Anifracene	Sberzofuran	fexachloro-1,3-Butadlen	lexactionoberzene
Vapour intrusion - inhalation	POE concentration POE concentration Inhabition rate Exposure fine Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	Cross R R ET EF ED 8W AT ATING	ug/m3 mg/m3 m3/hr h/d d/y y kg d	0.00E+00 0.00E+00	3.485-08 3.486-11	0.00÷400 0.00÷400	5 006-08 5.006-11	2.08E-06 2.08E-09	2.17E-03 2.17E-06	0.00E+00 0.00E+00	0.00E+00 0.00E+00	5.218-08 5.218-11	0.00E+00 0.00E+00	4 11E-04 4 11E-07	0.00€+00 0.00€+00		1.20E-03 1.20E-06	3.04E-05 3.04E-08	1 52E+00 1.52E-03	9.87E-05 9.87E-08		0 00E+00		7.48E-07 7 48E-10	
	Average Intake from Inhalation carcinogens Inhalation Concer Siope Factor Risk Total carcinogenic risk for exposure route	i _e CSF _{lesh} R R _t	mg/kg-d kg-d/mg fraction fraction	0 4.00E-01 0.00E+00	3.25581E-12 4.00E-01 1.30E-12	0 4.00E-01 0.00E+00	4 67789E-12 4 00E-01 1.87E-12	1.946E-10 4.00E-01 7.78E-11	2.0302E-07 2.73E-02 5.54E-09	0 3.08E-01 0.00E+00	0 3.08E+00 0.00E+00	4.87436E-12 3 08E-01 1.50E-12	0 3 086-01 0.00€+00	3.84522E-08 1 16E+00 4.46E-08	0	0	1.12269E-07	2.84415E-09 5.20E-02 1.48E-10	0.000142208	9.23415E-09	1.0572E-06 8.10E-02 8.56E-08	0 3.08E-01 0.00E+00		6.99812E-11 7.70E-02 5.39E-12	1 61E+00
	Average intake from inhalation non-carcinogens inhalation Reference Dose Hazard Quotient Total Hazard Index	l _u RfD _{mk} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	0	9 49611E-12	0	1.36438E-11	5 675845-10	5 92142E-07 8.57E-03 6.90948E-05	0	0	1.421695-11	0	1.121525-07	0	0	3.27452E-07	8.29545E-09	0.000414773 1 70E-02 0.024398388	2.69329E-08	3.083515-06	0	8.84849E-08	2.041125-10	3.27452E-10
ingestion of tap water	POE concentration POE concentration Water ingestion rate Exposure frequency Exposure duration Body weight Averaging time carcinogens Averaging time non-carcinogens	C C IR EF ED BW AI ATn	ug/in mg/m3 l/d d/y y kg d	0.1603 0.1603	0.0916 0 0916	0.05954 0.05954	0 10076 0 10076	4.122 4.122	75.73 75.73	0.65036 0.65036	0 60456 0 60456	0.922185 0 922185	0.5313 0 5313	5 616 5 616		109.92 109.92	2.34 2.34	0.04389 0.04389	2901 18 2901 18	0 19188 0 19188	12.168 12.168	0 49335 0 49335		0 68242 0 68242	
	Average intake from ingestion carcinogens ingestion Cancer Slope Factor Risk Total carcinogenic risk for exposure route	L CSF。 R R,	mg/kg-d kg-d/mg fraction fraction	1.50575E-06 4 00E-01 6.02E-07	8 60431E-07 4.00E-01 3.44E-07	5 5928E-07 4 00E-01 2.24E-07	9 46474E-07 4 00E-01 3 79E-07	3.87194E-05 4 00E-01 1.55E-05	0.000711358 5 506-02 3 916-05	6.10906E-06 7.30E-01 4.46E-06	5.67884E-06 7.30E+00 4 15E-05	8.6624E-06 7.30E-01 6.32E-06	4 99068E-06 7.30E-02 3.64E-07		7.64919E-06	0 001032517 1 40E-02 1 45E-05	2.19804E-05 6.20E-02 1.36E-06	4 12274E-07 1,30E-01 5,36E-08	0.027251789	1 8024E-06 8 40E-02 1.51E-07	0 000114298	4.63421E-06 7.30E+00 3 38E-05		6 41021E-06 7.80E-02 5 00E-07	1 60E+00
	Average intake from ingestion non-carcinogens ingestion Reference Dase Hazard Quotient Total Hazard Index	l, RfD, HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	4,39178E-06	2.50957E-06	1.63123E-06	2.76055E-06 2.00E-05 0 138027397	0 0001 12932	0.002074795 4.00E-03 0.51869863	1 781816-05	1 45433E-05	2.52653E-05	1.45562E-05	0 000153863	4 00E-02	0 003011507 2 006-02 0 150575342	6.41096E-05 2.00E-02 0.003205479	7 00E-04	2.00E-02	5.25699E-06 2.00E-02 0.000262849	1 00E-02	1.35164E-05	4 006-03	1.86964E-05 2.00E-04 0.093482192	8.00E-04
Dermal contact with tap water	POE concentration event duration absorbed dose per event Event frequency Exposure frequency Stin surface area Body weight Averaging time non-carcinogens	C _w tevent Daever EV ED EF SA BW AT ATn _a	ug/l hr mg/cm2-ever events/day y d/y cm2 kg d/y d	0.1603 5.21778E-06	0 0916 2.28188E-07	0.05954 1.59109E-07	0.10076 4.27428E-07	4 122 0.000109202	75.73 1.28037E-06	0.45036 9.14736E-07	0.60456 1.46103E-06	0.922185 2.26152E-06	0.5313 1.28432E-06	5.616 1.72638E-08		109.92 1.8825E-05	234 2.13911E-08	0 04389 1.32811E-09	2901.18 0.00011633	0.19188 1.63014E-09	12.168 1,23335-07	0 49335 1 85163£-06	0 7557 1.51142E-07	0 68242 1.84025E-07	0.67784 3.52242E-07
	Absorbed close for carcinogens Dermal Cancer Slope Factor Risk Total carcinogenic risk for exposure route	DAD _e CSF _{our} R R ₁	mg/kg-d kg-d/mg fraction fraction	4.41112E-06 4 00E-01 1 76E-06	1.92911E-05 4.00E-01 7.72E-06	1 34511E-05 4.00E-01 5 38E-06	3.61348E-05 4 00E-01 1.45E-05	0.009231943 4.00E-01 3.69E-03	0.000108242 5.50E-02 5.95E-06	7.7501E-05 2.35E-01 1.82E-05	0.000123515 2.35E+00 2.90E-04	0.000191189 2.30E-02 4 40E-06	0.000108577 7.30E-02 7.93E-06		7.4215E-06	0.001591465 1 40E-02 2.23E-05	1.80645-06 6 205-02 1 125-07	1.12279E-07 1.30E-01 1.46E-08	0.009834593	1.37813E-07 8.40E-02 1.16E-08	1 04263E-05	0.000156537 7.30E+00 1.14E-03		1.55575E-05 7 80E-02 1.21E-06	1 60E+00
	Absorbed dose for non-carcinogens Dermal Reference Dose Hazard Quoffent Total Hazard Index	DAD _{no} RfD _{des} HQ HI	mg/kg-d mg/kg-d mg/kg-d mg/kg-d	1.28658E-05	5.62656E-05	3 92325E-05	0.000105393 2.00E-05 5 269657043	0.0269265	0.000315707 4 00E-03 0.078926641	0.000226045	0.000360253	0 000557635	0.000316682	4 25684E-06	4 00E-02	0.004641774 3 80E-03 1 221519561	2.00E-02	7.00E-04	4-20E-03	2.00E-02	2.006-03	0.000456565	3.72678E-05 4.00E-03 0.00931695	4 5376E-05 2 00E-04 0.226879999	8 00E-04
Vapors from tap water 3/mol. those with a "\"]	Concentration in top water Concentration in top water Volatilization factor POE concentration Inhalation rate Exposure time Exposure time Exposure duration Body weight Averaging time carcinogens	C VF C IR EI EI EI EI EI EI EI EI EI EI EI EI EI	ug/l mg/m3 dimensionless mg/m3 m3/hr h/d d/y y kg d	0.1603 0 1603 0	0 0916 Y	0.05954 0.05954 0	0 10076 0 10076 0 00005038	4 122 4 122 7 0.002041	75 73 75 73 7 0 037845	0 65036 0 65036 0	0 60456 0 60456 0	0.922185 0.922185 7 0.000461093	0.5313 0.5313 0	5 616 Y		109 92	2.34 2.34 9 0.00117	0.04389 0.04389 9 0.000021945	2901.18 2901.18 9 1 45059	y ·	12.168 12.168 9 0.006084	0 49335 0 49335 0	0 7557 Y	0 68242 0 68242 0 0 00034121	0.67784 y
	Averaging time carcinogens Average intake from inhalation carcinogens	ATn _a	d mg/kg-d	O	4 284946-06	0	4 71344E-06	0 000192822	0.003542563	0	٥	4 313886-05	0	0 00026271	0	0	0.000109463	2.0531 2 E-06	0.135713907	8.97593E-06	0.000569205	0	3.535085-05	3 19228E-05	3.17086E-05

TABLE 7-28

RME RISK CALCULATIONS FOR ADULT RESIDENT (LOW TCE SLOPE FACTOR, WELL A)

Microsoft Residence of the Property of th

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Exposure Route	Parameter	Symbol	Units	indeno(12.3.cd)Pyrene	2-methytrophthatene	Pophthalene	emicas of Post	entral Concern	Pentochkorophenol	Tetrachloroethene	Trichloroeithene	Viny Chloride	Total	
									<u>_</u>	·				
Vapour intrusion - inhalation	POE concentration POE concentration	Con Con	ug/m3 mg/m3	0.00E+00 0.00E+00		2.75E-04 2.75E-07	6.87E-06 6.87E-09	0.00E+00 0.00E+00	0.00 +3 00.0	1.31E-03 1.31E-06	2.50E-02 2.50E-05	9.36E-04 9.36E-07	- 1	
	Inhalation rate	IR	m3/hr	0.002.00		2.750-07	UG/ L-0/	ULANE-100	UAGE-100	12011-00	2-302-03	7.300-07		
	Exposure time	ET	h/d											
	Exposure frequency	EF .	d/y											
	Exposure duration Body weight	ED BW	y kg											
	Averaging time carcinogens	AT.	ď										1	
	Averaging time non-carcinogens	ATn _a	d											
													- 1	
	Average intake from inhalation carcinogens	٠ <u>٠</u> ٠	mg/kg-d	0		2.57284E-08	6.42742E-10	0	0	1.22561E-07		8.757E-08	1	
	Inhalation Cancer Slope Factor Risk	CSF _{tria} R	kg-d/mg fraction	3.08E-01 0.00E+00						2.10E+00 2.57E-07	6.00E-03 1.40E-08	3 005-02		
	Total carcinogenic risk for exposure route	Ř,	fraction	V.OUCTUU						4.3/04/	1.400-06	2.635-09	4.258-07	
												Ĺ		
	Average Intake from Inhalation non-carcinogens	۴	mg/kg-d	0		7.504116-08	1.87466E-09	0	٥	3.574686-07	6.821925-06		1	
	Inhalation Reference Date	RfD _{mh}	mg/kg-d			8 57E-04	5.71E-04			1.405-01	1 145-02	2.865-02		
	Hazard Quatient Total Hazard Index	HQ HI	mg/kg-d mg/kg-d			8.75625E-05	3.28312E-06			200335E-06	0.000598414	8.93051E-06	2.444-02	
	Foregoe a college of the manage		······································											
ingestion of tap water	POE concentration	C.	ug/l	0.5313		1,8183	D 19646	7.5816	4.14032	5.39	15.25	0.34164	- 1	
	POE concentration	Ç.,	mg/m3	D 5313		1.8183	D 19646	7.5816	4.14032	5.39	15.25	0.34164	1	
	Water Ingestion rate	iR Ef	l/d d∕y											
	Exposure frequency Exposure duration	ED	чу У											
	Body weight	BW	kg										l l	
	Averaging time carcinogens	AT _o	d											
	Averaging time non-carcinogens	ATn _o	d											
	Average intake from ingestion carcinogens	4	mg/kg-d	4.99068E-06		1 707005.06	1 845495.04	7 101445.06	3.88915E-05	£04301E0¢	0.000143249	3.20914E-06	1	
	Ingestion Concer Stope Factor	ČSF.	kg-d/mg	7,30E-01		1.507772-03	1350421-00	7.00E+00	1.20E-01	5.40E-01	6.00E-03	7.206-01		
	Risk	R	fraction	3.645-06				4.99E-04	4.67E-06	2.73E-05	8.59E-07	2.31E-06		
	Total carcinogenic risk for exposure route	R,	fraction										7,948-54	
	Average intake from ingestion non-carcinogens ingestion Reference Dose	l, RfD₀	mg/kg-d mg/kg-d	1 45562E-05		4.98164E-05 2.00E-02	5.38247E-06 5.00E-04	0 000207715	9.000113433 3.00E-02	0.000147671 1.00E-02	0.000417808 3.00E-04	0.00000936 3.00E-03	- 1	
	Hazard Quotient	HQ	mg/kg-d			0 002490822				0 014767123	1.392694064	0.00312	i	
	Total Hazard Index	HI	mg/kg-d						0.0007.01114		12,20, 1001	0.000.1	4.800-05	
		_												
Dermal contact with top water	POE concentration	C _w	ug/i	0.5313		1.8163	0.19646	7. 58 16	4.14032	5.39	15.25	0.34164		
	event duration absorbed dose per event	tevent Daevent	hr mg/cm2-ever	1 35781E-04		1 932475.07	1 410335.00	2 817795.08	5 59223E-04	3 410795.07	2.84781E-07	2.010945.09	- 1	
	Event frequency	EV	events/day	1.00/012-00		1 50257 2-07	1.010002-07	2017/72-00	3-30E20E-Q0	3.010//2-0/	2.04/012-0/	1010040-07		
	Exposure duration	ED	y										i i	
	Exposure frequency	EF	d/y										- 1	
	Skin surface area Body weight	SA BW	cm2 kg										- 1	
	Averaging time	AT	d/y											
	Averaging time non-carcinogens	ATn _a	ď											
	Alto-ada-al alama fan a amele	DAD	mather =	D 00011		1 104	10/107-0-	0.00011555	0.000/2022	0.000000-0-	0 103 0-		ł	
	Absorbed dose for carcinogens Dermal Cancer Slope Factor	DAD _o CSF _{der}	mg/kg-d kg-d/mg	0 000114789 2.30E-01		1.12064E-05	1.36137E-07	2.38216E-06 1 80E+00	0.000471922 1.20E-01	3.05257E-05 5.40E-01	2.40754E-05 9.00E-04	1.70673E-07 7 20E-01	ŀ	
	Permai Caricer Slope Factor Risk	R	rig-a/mg fraction	2.646-05				4.29E-06	5.66E-05	1.65E-05	2.176-08	1 23E-07	l	
	Total carcinogenic risk for expasure route	Ř,	fraction									. 200 07	5.385-03	
			_										1	
	Absorbed dose for non-cardinogens	DAD _{no}	mg/kg-d	0.000334801		3.28603E-05		6.94796E-06	0.001376441	8.90332E-05	7 022E-05			
	Dermal Reference Dase Hazard Quofient	RfD _{der} HQ	mg/kg-d ma/ka-d		4.00E-03	2 00E-02 0.001643016	5.00E-04		3.005-02	1,00E-02 0.008903317	4 505-05	3.00E-03 0 000165932	1	
	Total Hazard Index	HG HI	mg/kg-d mg/kg-d			V.W1043U16	U UUU/74134		Jun-300 383	JJU007U331/	1.000740460	y 000 to3732	1.352+01	
Vapors from top water	Concentration in top water	C.	ug/l	0.5313		1.8183	0.19646	7.5816	4.14032	5.39	15.25	0.34164	i	
	Concentration in top water	C _w	mg/m3	0 5313		1.6183	0 19646	7.5816	4.14032	5.39	15.25	0.34164		
not those with a "V")	Volatilization factor POE concentration	VF C _{o-top}	dimensionless mg/m3	0 9			0.00009823	0	0		9 0.007625	9 0.00017082		
~	Inhalation rate	LR IR	mg/ms m3/hr	U		U.WW107 (3	4.44407023	U	Ü	AMU5042	0.001023	UMUN 1700Z	ì	
	Exposure fime	Ē	h/d										ı	
	Exposure frequency	Œ	d/y										- 1	
	Exposure duration	ED	y										- 1	
	Body weight	BW	kg											
	A managing time combacces	AT												
	Averaging time carcinogens Averaging time con-carcinogens	AT _o	d											
	Averaging time carcinogens Averaging time non-carcinogens	AT _o ATn _o	d											

TABLE 7-28
RME RISK CALCULATIONS FOR ADULT RESIDENT (LOW TCE SLOPE FACTOR, WELL A)
Missouri Electric Worlds, Cape Girardeau

														Ch	emicals of Pot	ential Concer	· · · · · · · · · · · · · · · · · · ·							
Source Medium	Exposure Medium	Exposure Point	Exposure Route	Parameter Inhalation Cancer Scoe Factor	Symbol CSF ₈₈ h		Non Contaminani- Specific Parameters	1 1.2 2-Tetrachloroethore	2017 2017 2017 2017 2017 2017 2017 2017	1,1-Dichlaroethane	Total 1,2 Dichloroethene	1.2.4 Tricharaberzene	20-201 6 12-15-15-15-15-15-15-15-15-15-15-15-15-15-	1,2-Dichlaropropane	1.3-Dichlorobenzene	7.90E/05 11.4-Dichknoberzene	22.4 6-Trichkorphenol	2.4-Dinitrototuene	2 6-Dinitrotolvene	2-Chlorophenol	3 3-Dichlarobenzidne	4,6-Diritro-2-Methyl Phenol	Arrocior-1016	Arocka-1221
				Risk	R	fraction		4.66E-07	4 125-07				1 16E-06			5.11E-05							4 00E-01 4.28E-06	4 00E-01 0 00E+00
				Total carcinogenic risk for exposure route	R,	fraction mg/kg-d		/ TO 1 TO 1	0.103125.05	0.0000000000004	0.001404390	0.0000777040	n 700400 02	1070455.05	0.001001000	A 00/17	_	_			_	4		_
				Average Intake from Inhalation non-carcinogens Inhalation Reference Dose	RfD _{bea}	mg/kg-d		6./UII/E-US	2.10715E-05	0 000003704	0 90 1476/27	0.008257249		1 145-03	0.006001923	2.30E-01	Ü	ū		0.000256641	0	0	3.12444E-05	0
				Hazard Quotient	HQ	mg/kg-d							0 026453448			0.029435092								
				Total Hazard Index	н	mg/kg-d	_																	
	Surface Water	Creek	incidental ingestion of creek water	POE concentration	C.	ug/l		3.87145E-05	0.00014692	0 005107025	0 168484251	0.003415705	0.000258223	0.000138016	0.277239592	0.332753253	8.07239E-0.5	0.001055151	0.0001112	0.001482485	0.000124381	7.99002E-05	4.276F-07	2.479896-07
	50.1255 7.2.2			POE concentration	C.	mg/m3		3.87145E-05				0 003415705									0.000124381			2.47989E-07
				Water ingestion rate	IR .	l/d	0.05																	
				Exposure frequency	ED ED	d/y	52 24																	
				Exposure duration Body weight	BW	y ka	70																	
				Averaging time carcinogens	AT _o	d	25.550																	
				Averaging time non-carcinogens	Aīn _e	d	8.760																	
				Average intake from ingestion carcinogens	L,	mg/kg-d		1,35073E-12	5 12597E-12	1.78182E-10	5.87834E-09	1.19172E-10	9.00928E-12	4.8153F-12	9 67277E-09	1.140945-08	2.81642E-12	3 481385-11	3 87977F-12	5.17302E-11	4 33050E-12	2 78748F-12	1 491885-14	8.65223E-15
				ingestion Concer Slope Factor	ĊSF,	kg-d/mg		2.006-01	5.70E-02			,.,22.10	9 106-02	6.80E-02		2.406-02					4 506-01	2.7070DC-12	4 00E-01	
				Risk	R	fraction		2,706-13					8-20E-13	3.27E-13		2,79E-10					1 95E-12		\$ 97E-15	
				Total carcinogenic risk for exposure route	R,	fraction																		
				Average intake from ingestion non-carcinogens ingestion Reference Dose	ار RfD₀	mg/kg-d mg/kg-d		3.93964E-12 6 00E-02	1,49507E-11 4 00E-03	5 19697E-10 1 00E-01	1.714525-08 1 00E-02	3 47586E-10							1.13159E-11 1.00E-03		1.26571E-11	8 13075E-12 1.00E-04	4.35131E-14 7.006-05	
				Hazard Quotient	HQ	mg/kg-d			3.73769E-09						9.40408E-07		8 21457E-08						6.21616E-10	
				Total Hazard Index	Н	mg/kg-d											· · ·							
			Dermal contact with creek water	POE concentration	C,	ug/l		3.87145E-05	0.00014692	0.005107025	0 168484251	0 003415705	0.000258223	0.000138016	0.277239592	0.332/53253	8.07239E-05	0.001055151	0.0001112	0.001482685	0 000124381	7 99002E-05	4.276E-07	2.47989E-07
				event duration	tevent	hr	2																	
				absorbed dose per event		t mg/cm2-event		1 012896-12	2.99941E-12	9 418175-11	3 521195-09	9.32615E-10	2.97547E-12	3.08949E-12	5.39677E-08	4 70013E-08	1.27568E-11	1.3531E-11	0	3.66143E-11	1.04164E-11	1 13569E-12	0	1.49895E-13
				Event frequency Exposure duration	EV ED	events/day	24																	
				Exposure frequency	EF	d/γ	52																	
				Skin surface area	SA	cm2	18,000																	
				Body weight	BW	kg	70																	
				Averaging time Averaging time non-carcinogens	AT ATn _o	d/y d	25,550 8,760																	
				Marging min lice Location Spin		-	۵,7																	
				Absorbed dose for carcinogens	DAD _o	mg/kg-d			3.76733E-11	1.18295E-09	4 4227E-08	1 17139E-08				5.90347E-07		1.69953E-10	0	4.59884E-10	1.30832E-10	1 42646E-11	0	1.88271E-12
				Dermal Cancer Slope Factor	C2E***	kg-d/mg		2.005-01					9 10E-02	6.80E-02		2.40E-02					4 50E-01		4 00E-01	4 00E-01
				Risk Total carcinogenic risk for exposure route	K R₁	fraction fraction		2.545-12	2.15E-12				3 40E-12	2.64E-12		1 425-08	1 765-12	1.36E-10	0 00E+00		5.89E-11		0.00£+00	7 53E-13
				TOTAL CARCINOGOTISC TOK TO EXPOSOTO TOURS	•																			
				Absorbed dose for non-carcinogens	DAD _{nc}	mg/kg-d		3 71064E-11		3 45026E-09		3 41655E-Q8						4 95697E-10			3.81 <i>5</i> 94E-10			5 49125E-12
				Dermal Reference Dose	RfD _{der} HQ	mg/kg-d		6.00E-02		1 005-01	1 00E-02											1.00E-04	7.00E-05	
				Hazard Quotient Total Hazard Index	HQ HJ	mg/kg-d mg/kg-d		6.1844E-10	Z/4/UIE08	3 450265-08	1.287756-05	3.41655E-06	5.45U18E-09	I WARY IL-07	0.370186-05	3./3949E-05	4 6/332E-06	2.47848E-07	. 0	2 68266E-07		4 16049E-07	0	
	 •-		Caramagenic risk - ali routes (detecte	d organics)		- -	_											_	_					-
			Carcinogenic risk - all routes (underted TOTAL CARCINOGENIC RISK - ALL ROU		Sum Pł	fraction		571E-07	5 03E-07	0 00E+00	0 00E+00	0 00E+00	1 405-06	1 02E-07	0 00E+00	6 98E-05	1 87E AG	7 60E-06	8 88E A4	0 00E+00	0 38E A7	0 00E+00	£ 15E.74	1 96E-06
			Non-Carcinogenic risk - all routes (del					37112-07		\$ 30L-00				. 026-07		3,02-03	.271-00	, 501-00	0.001-00	- WE-W	,.xxx.	0.002+00	3.130-06	: 700-06
			Non-Carcinogenic risk - all routes (und	detected organics)			·																	
			TOTAL NON-CARCINOGENIC HAZARD	INDEX - ALL ROUTES	Sum Hi	fraction		2 527\4E-05	0 001157468	0 001915364	0 032748781	7 629408459	0 026880996	0 021362187	0 077382249	0 105197103	0 049551913	0 016138616	0 003865765	0 011474335	- 0	0 029684879	0 089628181	

113332_1.XLS

Notes:

1- ug/l = micrograms per Liter

2- ug/m3 = micrograms per cubic meller

3- h/d = hours per day

4- l/d = hites per day

5- d/y = days per year

6- y = year

7- kg = klagram

8- d = day

9- hy = hour

10- ma/kg-d = milligrams per klaggram per

9- hy = hour
10- mg/kg-d = milligrams per kilogram per day
11- kg-d/mg = kilograms per day per milligram
12- cm2 = square certilmeter
13- m3/hr = cubic mester per hour
14- mg/m3 = milligrams per cubic meter
15- mg/cm2-event = milligrams per square centilmeter per event
16- mg/cm3-event = milligrams per square centilmeter per event

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TABLE 7-28
RME RISK CALCULATIONS FOR ADULT RESIDENT (LOW TCE SLOPE FACTOR, WELL A)
Missouri Bectric Works, Cape Glazideau

												Chemico	s of Potential (Concern											
				clor-1222	clor-1242	clor-1248	clor-1254	cior-1260 (Filtered)	enez.	izo(a) anttracene	co(a) pyrene	anedunation (d)	zo(k) fluoranthene	2-Chloroethyl) Ether	2-Chlorokopropy≬ Ether	(2-elftyfrexyl phtholate)	modichloromethane	bon Tetrochloride	orobergene	orodipromomethane	oolom	enzo(a.h)Anitracene	erzofuan	ochloro-1,3-Butadene	
Exposure Roule	Parameter	Symbo		<u>₽</u>	E	¥	<u>\</u>	<u>₹</u>		- <u>\$</u>	2 2 2 2	<u>\$</u>	<u> </u>	<u>a</u> _	<u>*</u>		<u>g</u>	8		<u></u>	<u> </u>	<u></u>		<u>.</u>	
	Inhalation Cancer Slope Factor Rtsk	CSF _{bah}	kg-d/mg fraction	4.00E-01 0.00E+00	4.00E-01 1.71E-06	4 00E-01 0.00E+00	4 005-01 1 895-06	4 00E-01 7.71E-05	2.73E-02 9 67E-05	3.08E-01 0.00E+00	3 D8E+00 0 00E+00	3 085-01 1,335-05	3.08E-01 0.00E+00	1 16E+00 3.05E-04				5.20E-02 1.07E-07			8.10E-02 4.61E-05	3.08E-01 0.00E+00		7 70E-02 2,46E-06	1.611 5.11
	Total carcinogenic risk for exposure route	R,	fraction	3.332.33									002.00	2002 21				12/20/			4.012-00	UANE-00		2,402 00	۵.,
	Average intake from inhalation non-carcinogens	L.	mg/kg-d	0	1.24978E-05	0	1.37475E-05	0.000562399	0 010332477	0	0	0.000125821	0	0.000766238	0	0	0 000319266	5.98828E-06	0 39583223	2.61798E-05	0.001660182	0	0 000103106	9.31083E-05	9.24834
	Inhalation Reference Dose	RfD _{inh}	mg/kg-d						8 57E-03										1 70E-02						
	Hazard Quotient	HQ	mg/kg-d						1 205656559										23.28424883						
	Total Hazard Index	н	mg/kg-d					_						-									_		
cidental ingestion of creek water		C _w	ug/l			1 11168E-07				1.214295-06		9.13887E-09		0.005342537			0.002226	3.4596E-05							4.00642
	POE concentration	C*	mg/m3	2992975-07	1.71027E-07	1 111686-07	1.8813E-07	7.69621E-06	0.003648704	1.21429E-06	1.12878E-06	9 13887E-09	5.26519E-09	0.005342537	0.000774668	0.000205232	0.002226	3.4596E-05	1.35956262	0.000182537	0.011575497	4 88911E-09	1.41097E-06	1.27415E-06	4.00642
	Water ingestion rate	ir Ef	l/d d/y																						
	Exposure frequency Exposure duration	ÉD	ω, v																						
	Body weight	8W	ka:																						
	Averaging time carcinogens	AT _c	ď																						
	Averaging time non-carcinogens	ATn _o	d																						
	Average intake from ingestion carcinogens	i,	mg/kg-d	1.04423E-14		3.87859E-15	6.56376E-15		1.27302E-10	4.23661E-14	3.93826E-14	3.188516-16	1.837E-16	1.86399E-10	2.70278E-11	7 16047E-12	7 76642E-11	1.207045-12	4 74346E-08	6.36863E-12	4.03864E-10	1 70579E-16	4.92282E-14	4.44546E-14	1.39782
	Ingestion Cancer Slope Factor	CSF.	kg-d/mg	4.00E-01	4.00E-01	4.00E-01	4.00E-01	4.00E-01	5.50E-02	7,306-01	7 30E+00	7.30E-01	7 30E-02			1 406-02	6.20E-02	1.306-01		8.40E-02		7.30E+00		7.80E-02	1 605
	Risk Total carcinogenic risk for exposure route	R R,	fraction fraction	4.185-15	2.39E-15	1.55E-15	2.63E-15	1.07E-13	7.00E-12	3.09E-14	2.875-13	2.33E-16	1.346-17	2.05E-10		1 00E-13	4.82E-12	1.57E-13		5.35E-13		1.25E-15		3.47E-15	2.24
	Average intake from ingestion non-carcinogens	i,	mg/kg-d	3.04569E-14	1.74039E-14	1.131256-14	1.91443E-14	7.83176E-13	3.71297E-10	1.23568E-13	1 14866E-13	9 29983E-16	5.35793E-16	5 43663E-10	7.88312E-11	2.08847E-11	2.26521E-10	3.52053E-12	1.383516-07	1.85752E-11	1.17794E-09	4 97522E-16	1.435825-13	1.29659E-13	4.076988
	Ingestion Reference Dose	RfD.	mg/kg-d				2.005-05		4 00E-03						4 00E-02	2.00E-02	2.00E-02	7.00E-04					4 006-03	2 006-04	8.001
	Hazard Quotient	HQ	mg/kg-d				9.57215E-10		9 28242E-08						1.97078E-09	1.04423E-09	1 13265-08	5.02933E-09	6.91754E-06	9 28758E-10	1 17794E-07		3.58956E-11	6.48296E-10	5.09623
<u> </u>	Total Hazard Index	HI	mg/kg-d																						
ermal contact with creek water	POE concentration	C.,	ug/l hr	2.99297E-07	1 71 027E- 07	1 111686-07	1.8813E-07	7.69621E-06	0.003648704	1.214295-06	1 12878E-06	9.13887E-09	5.26519E-09	0.005342537	0 000774668	0.000205232	0 002226	3.4596E-05	1.35956262	0.000182537	0.011575497	4 889115-09	1 41097E-06	1,27415E-06	4.00642
	event duration absorbed dose per event	tevent Daever		r 1,809075-13	7 011 585-13	5.516536-13	1 4R1955-12	3 784175-10	1 345345-10	3 178445-12	5.045575-12	4 141755-14	23/3/45/14	3.176335-11	1 550795-10	6.52686E-11	3 279715-11	1 001455-12	1.077526-07	2 27975-12	2.34503E-10	3.407445-14	6.240205-12	4 2002BE-12	3.86609
	Event frequency	EV	events/day	120/0/2-15	7711000-10	0.010002-10	1 40,742 12	G, 5017E-15	12020-12-10	2.70 TE 12	0000/E-12	42.101702-14	2304-02-14	G. IT GARGETT	1200/02-10	0	3,707 IL-11	1771001-12	12077322-07	20///212	2343031410	3 10/11-11	3.27020L-13	DAGGEOR-15	3-00007
	Exposure duration	ED	у																						
	Exposure frequency	EF	d/y																						
	Skin surface area	SA	cm2																						
	Body weight	BW AT	kg d/y																						
	Averaging filme Averaging filme non-carcinogens	Aĭn _e	d																						
	Absorbed dose for carcinogens	DAD.	mg/kg-d	2.27224E-12	9 93714E-12	6.9289E-12	1.86136E-11	4 75552E-09	1.7149E-09	3.9922E-11	6.36248E -11	5 227265-13	2.96857E-13	3.98954E-10	1 94782E-09	8 1979E-10	4.74615E-10	2.50156E-11	1 35339E-06	3.61698E-11	2.94541E-09	4.27983E-13	6.58192E-12	6.01392E-12	4.8559
	Dermal Cancer Slope Factor	CSF.	kg-d/mg	4.00E-01	4.00E-01	4.00E-01	4 00E-01	4 005-01	5.50E-02	2.35E-01	2.35E+00	2.30E-02	7.30E-02			1 40E-02	6 20E-02	1 30E-01		8.40E-02		7.30E+00		7.80E-02	1.60
	Risk	R	fraction	9.09E-13	3.97E-12	2.77E-12	7.45E-12	1.905-09	9 43E-11	9.38E-12	1.50E-10	1.20E-14	2.17E-14	4.39E-10		1.15E-11	2.94E-11	3.25E-12		3.04E-12		3.125-12		6.25E-13	7.77
	Total carcinogenic risk for exposure route	R,	fraction																						
	Absorbed dose for non-carcinogens	DAD	mg/kg-d	6.62737E-12	2 89833E-11	2 020936-11		1.38703E-08		1 16439E-10	1.85572E-10	1,52462E-12	8 65833E-13	1 16362E-09					3.94738E-06		8 59079E-09	1 24828E-12			1.4163
	Dermal Reference Dase	RfD _{der}	mg/kg-d				2.005-05		4 005-03						4.00E-02	3.80E-03		7 00E-04					4 00E-03	2 00E-04	8.00
	Hazard Quotient Total Hazard Index	HQ HI	mg/kg-d mg/kg-d				2.71449E-06		1.25045E-06						1 420285-07	6.27225E-07	6.92147E-08	1.042321-07	0.000636674	3.27476E-09	4.2954E-06		4 79931E-09	1 1687E-07	1.77038
cinogenic risk - all routes (detecte																							-		
cinogenic risk - all routes (undetect	cted organics)	5 mar 54	fraction	2 37E-06	9 77E-06	5 60E-06	1 67E-05	3 79E-03	T 42E-04	2.275-05	3,325-04	2.405-05	8 275-06	3 645-04	0 00E+00	3 67E-05	1 775 77	1 755 84	A AAE: AA	1 63E-07	4 62E-05	1 105 88	0.00€+00	/ 19EA/	· - (AX)
AL CARCINOGENIC RISK - ALL ROU -Carcinogenic risk - all routes (de:		Sum Rt	iraction	23/6-06	7 //6-06	5 6UE-06	1 6/1:05	3 /7E-03	1 4/25-04	22/1905	3.325-04	2.401:05	8 275-06	3 641:-04	0.005+00	3 6/5-05	1 47E-06	1 75E-07	0 COE+00	1 638-07	4 621:-05	1 18E-03	0.006+00	4 17E-06	1 09E
-Carcinogenic risk - all routes (un	detected organics)																								
AL NON-CARCINOGENIC HAZARD	INDEX - ALL ROUTES	Sum HI	fraction	Ō	- 0	- 0	5 407687156	0	1 803352269	0	- 0	0	0	0	0.001077049	1 372095534	0 003469286	0 002185746	31 9099987	0 000282953	0 048546432	0	0.014492982	0.3203/2308	0 1317816

TABLE 7-28
RME RISK CALCULATIONS FOR ADULT RESIDENT (LOW TCE SLOPE FACTOR, WELL A)
Missouri Bechic Works, Cape Ghardoou

				_	a	emicals of Pot	ential Concern						
				8	_		٤					ľ	
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				4	a a	£	ħ.	ğ	8	Ī	ۇ	Į	
				Ë	₹ <u>‡</u>	2	Ą	룱	身	2	충		
				Ě	重量	- 8	ğ	ğ	8	2	\$	8	
Exposure Route	Parameter	Symbol	Units	<u>_</u>	\tilde{\frac{1}{2}}	<u>_</u>	<u> </u>	<u> </u>		<u>£</u>		<u> </u>	
	Inhalation Cancer Slope Factor	CSF**	kg-d/mg	3.08E-01					2.10E+00	6.00E-03	3.00E-02	ì	
	Risk Total carcinogenic risk for exposure route	R R	traction traction	0.00E+00					5.29E-04	4.28E-06	4 79E-07	1 1/5/4	1
		•									L		•
	Average intake from inhalation non-carcinogens	ل	mg/kg-d	0	0 000248086	2.68047E-05	0	0	0.000735403			- 1	
	Inhalation Reference Dose	RfD _{bab}	mg/kg-d		8.57E-04	571E-04			1 40E-01	1 14E-02	2.86E-02	1	
	Hazard Quotient Total Hazard Index	HQ HI	mg/kg-d mg/kg-d		0.289481754	0.046943397			0.005252877	0 182516722	0.001629818	3.23	6
	TOKA HAZZIO INDEX		mg/kg-u										
cidental ingestion of creek water	POE concentration	C.,	ug/l	5.26519E-09	0 001433262	0 000154858	0.007212425	7 730425-06	0.000841116	0.029336582	0.000325004	l	
-	POE concentration	C.	mg/m3	5.26519E-09	0.001433262	0 000154858	0.007212425	7.73042E-06	0.000841116	0.029336582	0.000325004	I	
	Water Ingestion rate	1R	l/d]	
	Exposure frequency	F	d/y										
	Exposure duration Body weight	ED BW	y ka										
	Averaging time carcinogens	AT _o	ď									- 1	
	Averaging time non-carcinogens	Aln.	ď									- 1	
												i	
	Average intake from Ingestion carcinogens	اء درد	mg/kg-d	1.837E-16	5 00059E-11	5 40294E-12	2.51638E-10						
	Ingestion Concer Slope Factor Risk	CSF _e	kg-d/mg fraction	7.30E-01 1 34E-16			7 00E+00 1,76E-09	1.20E-01 3.24E-14	5.40E-01 1.58E-11	6.00E-03 6.14E-12	7 206-01 8.16E-12		
	Total carcinogenic risk for exposure route	Ř,	fraction	1 342-10			1./60-07	3245-14	1.300-11	6.14E-12	0.105-12	148.0	
	Average Intake from Ingestion non-carcinogens	ե RfD₀	mg/kg-d	5.35793E-16	1.45851E-10		7.33945E-10					- 1	
	Ingestion Reference Dase Hazard Quotient	HQ	mg/kg-d mg/kg-d		2.005-02	5 00E-04 3.15171E-08		3 00E-02 2 62219E-11			3.00E-03 1 10243E-08		
	Total Hazard Index	H	mg/kg-d		7 272335-07	3.131712-00		2 022175-11	0.3373047	7.731075-00	1 102432-00	3.15-6	
Comment of the commen	POE concentration	C.	ug/l	5.26519E-09	0.001422242	0.00015/069	0.002212426	7 720/25 0/	0.000041314	0.029336582	0.000225004		
Dermal contact with creek water	event duration	tevent	hr	3.265175-07	0 001433262	0 000 (54636	0 00/212425	/ /3UAZE-U0	0.0000411116	U.U.27336362	0.000325004		
	absorbed dose per event	Daevent		2.49869E-14	2,00333E-10	2.52675E-12	5.27912E-11	1 93543E-11	1 04633E-10	1 06659E-09	4.46083E-12		
	Event frequency	EV	events/day										
	Exposure duration	ED	y .										
	Exposure frequency	EF	d/y _									ľ	
	Skin surface crea	SA BW	cm2									ŀ	
	Body weight Averaging time	VI.	kg d/y										
	Averaging time Averaging time non-carcinogens	Alin _e	d d										
		-										ì	
	Absorbed dose for carcinogens	DAD _e	mg/kg-d	3.13842E-13	2.51624E-09	3 17365E-11			1.314225-09		5.60291E-11	Į	
	Dermal Cancer Slope Factor	CSF _{der}	kg-d/mg	2.30E-01			1.80E+00	1 205-01		9.005-04		ļ	
	Risk	R	fraction	7.225-14			1 195-09	2.9 26 -11	7.10E-10	1.21E-11	4.03E-11	أسيين	
	Total carcinogenic risk for exposure route	R,	fraction									1,916,08	
	Absorbed dose for non-cardinogens	DAD _{no}	mg/kg-d	9 15373E-13	7.33902E-09	9.25649E-11	1.93395E-09	7.09027E-10	3.83315E-09	3.90735E-08	1 63418E-10	l	
	Dermal Reference Dose	RfD _{der}	mg/kg-d		2.006-02	5 00E-04		3 00E-02				Į	
	Hazard Quotient	HQ	mg/kg-d		3.66951E-07	1.8513E-07		2.36342E-08	3.83315E-07	0.000868301	5.44727E-08		
	Total Hazard Index	H	mg/kg-d									1.668-05	
rcinogenic risk - all routes (detecte	d organics)											5 53E-03	
proinogenic risk - all routes (undetec	rted organics)											1.82E-03	
YAL CARCINOGENIC RISK - ALL ROU		Sum Rt	fraction	3.00E-05	0 00E+00	0 00E+00	5 03E-04	6.13E-05	5 74E-04	5.18E-06	2.92E-06	736E-03	
n-Carcinogenic risk - all routes (det n-Carcinogenic risk - all routes (und												4 65E+01 6 14E+00	
TAL NON-CARCINGGENIC HAZARD		Sum H)	fraction	0	0 273703529	0 058505962	0	0 04966249	0 028926262	3 137132437	0 004924746	5.27E+01	